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All Activities of Pharmacy and the Drug Industries Have a Mutual Interest in the A. Ph. A.—Contribute to Its Headquarters.

Vol. XIII, No. 11 **NOVEMBER, 1924**

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SEVENTY-THIRD ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN DES MOINES, IA., DURING THE WEEK OF AUGUST 31, 1925

The 1925 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Des Moines, during the week of August 31, 1925.

For Association Roster, see page x.

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H. LIONEL MEREDITH

HAGERSTOWN, MARYLAND

President of National Association of Boards of Pharmacy
1924–1925

H. LIONEL MEREDITH.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIII NOVEMBER, 1924 No. 11

H. LIONEL MEREDITH.

The business stationery of Mr. Meredith, now president of the National Association of Boards of Pharmacy, will attract the attention of those interested in the progress of pharmacy. We quote, "Prescription and Biochemic Laboratories—Office Hours: 8 A.M. to 12, 1 P.M. to 5 P.M., and by Appointment." This pharmacy has recently been the subject of an article in a pharmaceutical publication and, evidently, the venture has been successful. The gross receipts are smaller than of the business formerly owned and conducted by Mr. Meredith in Hagerstown, but the net profits are larger and the number of work-hours less.

The only further reference to this pharmacy is made for the purpose, in a way, of acquainting the readers with its owner. Before the laboratory was opened rules for its conduct were adopted; although success did not come at once, the proprietor exercised forethought, had persistence and possessed the essential courage. Just one example (more or less hypothetical) for general application is given. No merchandising is permitted. An item prescribed by a physician is dispensed in the office, whereas the very same article, which may or may not be on the market in package form, will not be sold on call to the same customer nor to any other patron who happens in the pharmacy to purchase, even at the time the prescription for that medicinal is being filled. Probably this may be an extreme case, but is here stated to bring out the point, which is only to indicate one of the principles of conduct governing that establishment. As has been said, it required courage to adhere strictly to the plan, but Mr. Meredith did and does, and has won. This trait introduces the subject perhaps just as well as writing at greater length of his activities, which will be very briefly reported.

After graduating from high school in Hagerstown, June 1892, young Meredith entered pharmacy under the preceptorship of D. C. Aughinbaugh & Son. The young man's qualities of observation and thoughtful application gained for him the *Druggists' Circular* Scholarship in 1897, awarded for a paper on "How to Conduct the Business of a Retail Pharmacy." He matriculated at the Philadelphia College of Pharmacy and graduated from this institution in 1900. His standing with his

fraters is evidenced by his selection as president of the class and the Zeta Phi Society of that year. The prize he esteemed highest was that of winning the daughter of the late Prof. John M. Maisch (Miss Marie), to whom he was married after graduation. He became a member of the American Pharmaceutical Association during this eventful year (1900).

In 1903 he was appointed on the Maryland Board of Pharmacy and has been its presiding officer; this (1924) is his seniority year as member. He served the Maryland Pharmaceutical Association in various offices; as president in 1909–1910. He has been chairman and member of important N. A. B. P. committees, and vice-president of the National Drug Trade Conference. In 1919 he completed a course in bio-chemistry and bacteriology at the University of Pennsylvania, and was awarded the Ph.M. degree by the Philadelphia College of Pharmacy and Sciences in 1922. He is now bacteriologist for Hagerstown; has been president of its Chamber of Commerce. He has held other civic positions—member of the Maryland Council of Defense, Emergency Fleet, Enlistment Bureau, Federal Fuel Commission, etc.

President Meredith is a Rotarian; he belongs to the Masonic bodies, is a member of the Presbyterian Church, and the Meredith home is enlivened and made happier by three budding children.

E. G. E.

THE WORK THAT SHOULD BE DONE BY THE MANY IS SOMETIMES LEFT FOR THE FEW TO DO.

The statement of the title needs no corroboration, so it is said. Many institutions have grown and have accomplished work because of the determination of a very limited number; the majority have, at times, sought excuses for their passiveness and for the activities of the few. Working millions of the individual fortunes have been withdrawn from trade and dedicated to research, and even these efforts have not escaped suspicion and ill-will. The opinion has been expressed that these millions may some day rule the country in the name of charity—but the question is, would this needful work be done at all if left to the multitude? Books, or at least a book has been published in which the complaint is made that the educational institutions are largely financed by rich men. If they were not, what would be the status?

A medical college and its hospital, celebrating its centenary this year, have retained their independence and collective individuality against the influences said to induce mergers in the name of greater scientific efficiency, but there is coming to them no largely increased financial aid from the state because of their very much larger service.

Some pharmacists in the various activities may set examples, exhibiting a larger interest, and give more general support to pharmaceutical institutions and organizations; join more actively in establishing the Pharmacy Headquarters by the contributions of the many, rather than of the few. The latter are very welcome, and the Association is correspondingly grateful, but its appeal is for all pharmacists to participate in the undertaking, which is to benefit pharmacy in all of its divisions; the many contributions evidence a spirit which should encourage others to do likewise.

E. G. E.

EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

AWAKENED INTEREST IN THE PHARMACY HEADQUARTERS CAMPAIGN.

WITHIN the last month a great impetus has been given to the Pharmacy Headquarters Building Campaign, because of the newly awakened interest of many of the state chairmen following the special meeting of state chairmen and committeemen held during the American Pharmaceutical Association Convention in Buffalo. But the greatest source of inspiration and encouragment has come within the last several weeks, through the adoption of a resolution by the National Wholesale Druggists' Association at their Atlantic City Convention, sanctioning the Headquarters Building project and the splendid resolution adopted by the National Association of Retail Druggists, during their convention in Washington, favoring this great enterprise and recommending that the entire membership of the National Association of Retail Druggists give their active support to this great cause. Recalling that the American Drug Manufacturers' Association passed a resolution at their meeting last spring, endorsing our enterprise, and that every state association, during the recent annual meetings, endorsed the project and that many of the state associations subscribed considerable sums to the Headquarters Building Fund, we, of the Campaign Committee, feel that the retail druggists throughout the United States and all of those members of the drug trade who are interested in pharmacy should be greatly encouraged with the results which have so far been obtained and cause all of us to renew our efforts to bring about the completion of this great work for the progress, service and benefit of pharmacy.

We need a full million dollars to erect, equip and endow this building which is planned to serve all branches and phases of pharmaceutical interests, under the auspices of the American Pharmaceutical Association. We have about half of it, and it is only through the combined efforts of many interested workers throughout the country that we can obtain the other half. This large sum cannot be obtained by a few of us; therefore, it is urgent and necessary that the work should be undertaken by the many and not left to the few. Our Committee is convinced that many thousands of prospective subscribers are sold on this splendid proposition and it is only necessary for them to be personally visited and asked to sign a subscription card to obtain the subscription. Just recently a large number of letters have been received from druggists who have sent in subscriptions voluntarily, in which they have stated that they had expected to be called upon by a committeeman and that they had not been visited and this would explain the delay in making their subscription. There are thousands of instances like this, where subscriptions will never be sent in voluntarily, nor will they ever be obtained unless the committeemen call upon them with a subscription card to be signed. Therefore, it is the request of our Campaign Committee that not only the committeemen take the responsibility of asking for the subscriptions of their fellow druggists, but that any one who has made a subscription will also take the responsibility of using his best efforts to interest other druggists in doing their full duty. The

slogan of our Committee now is that the druggists of the country have been sold on this proposition, but we need coöperation of many workers to collect the funds which the druggists are willing to give, *if personally visited.* H. A. B. DUNNING.

CHARACTER AND SCHOLARSHIP IN STUDENTS' RATINGS.

CHARACTER and personality of students are receiving more consideration in elementary schools and by institutions of higher and technical education; the importance has always been impressed on the boys and girls by their deportment marks, and the application is made by universities and colleges in rating qualifications that are not usually included in those for scholarship. Definitions of the qualities indicated have been given by the University of California in about the following terms:

Character is the quality which represents a student's habits, reliability and moral stability. *Address and Appearance* expresses the instructor's opinion of the student's ability to impress people favorably by his appearance, manners and amenities. *Leadership* is judged by the readiness with which a student takes and executes responsibility. *Disposition and Popularity* are determined by the student's reputation with the faculty and his classmates. *Speed* is a measure of a student's rate of accomplishing work and is best judged by the rapidity with which he finishes his examinations, calculations, drawings, etc. *Accuracy and Attention to Details* is a quality best judged in the laboratory and by care evidenced in arithmetical calculations, details of testing and manipulations. In the institution referred to a student's committee also rates the student body in these qualifications and its reports have a definite value in the grading by the faculty.

The importance of such considerations for students of pharmacy in the schools and colleges will readily be admitted, especially in institutions having a large student body. Assenting to a code of ethics is influential for good, but the lesson loses its significance unless, in some way, an application of the ethics is frequently made; in the system under discussion, character building is almost as constantly in mind as are the studies of educational subjects of the curriculum. Thereby the students arrive at a better estimate of their responsibilities and the faculty members are constantly reminded that the measurements students apply are standards of observation and thinking, for which the members of the faculty may be largely responsible. In order that the latter may fairly grade the students they must be more observant of the human qualities of the young men and women under their instruction. The spirit of emulation is a keen spur; the work of teachers is to train students, but students have a part in the education and training of teachers.

The responsibilities of members of pharmaceutical faculties have never been greater and the results of their training of students have always been influential in shaping the activities of pharmacy; it is one of the strong pleas and arguments which, if rightly made and impressed, will enlighten the public relative to the necessity of demanding the prerequisite of college graduation of those who seek to practice pharmacy, and the result will most assuredly bring about a compliance by states where such requirements do not now obtain. The public should be made better acquainted with the mission of pharmacy and the why—that the best service is given by those qualified by education, experience, and character. The right kind of publicity is a power for good. E. G. E.

WRONGFUL USE OF THE NAME OF THE AMERICAN PHARMACEUTICAL ASSOCIATION BY A CUBAN MANUFACTURER.

THE American Pharmaceutical Association regards highly its Cuban members. Not all have attended the annual meetings; some have, and the pleasure expressed, and the welcome accorded them, makes any further assurance unnecessary that no members are more highly regarded, and the appreciation they have evidenced leaves no doubt that they will gladly assist the Association in correcting the individual who has so unjustly appropriated the good name of the Association. Without doubt the Cuban members will condemn this trespass, and, if possible, regret the occurrence more deeply than their fraters in the States.

It is difficult to understand how anyone engaged in supplying the sick will lend himself to a misrepresentation, the knowledge of which he could not hope to keep from the Association for long, and wherein the name of the time-honored organization is deliberately appropriated for commercial advancement.

As stated, we are confident that the Cuban members of the American Pharmaceutical Association can be depended upon for prompt and positive coöperation in adjusting the matter which is presented in the following:

Under date of September 24, Secretary William B. Day received the following communication from the American Consul, Frank Bohr, stationed at Cienfuegos, Cuba:

"WILLIAM B. DAY, SECRETARY,
American Pharmaceutical Association, Chicago, Ill.

"Sir:

"I have to enclose herewith for your information and appropriate action a label of 'Especifico Brenot,' a patent medicine which is claimed to be prepared of Indian roots by a German process and to be effective as a blood purifier for syphilis, leprosy, ulcers, skin diseases, other venereal diseases, as well as general debility, chronic rheumatism, uric acid, etc., etc.—having been for the past year extensively advertised and sold in this city.

"You will note that it is claimed to be 'prepared by the Pharmaceutical American Ass., Philadelphia: E. U. A., General Department, Broadway St., 16th North,' whereas this Consulate has been informed that the product is really prepared by Doctor José Fernandez Valdez, a pharmacist now established at the corner of Gacel & Castillo, this city. And as this is evidently a crude infringement intended to give the uninformed the impression that this product has been prepared by your Association, I have to suggest that through your agents or importing house in Habana, your Association should make official protest which it is understood should be addressed to the Director de Sanidad, Secreteria de Sanidad y Beneficencia, Habana.

"I am, Sir,

Very respectfully yours,
(Signed) FRANK BOHR, *American Consul.*"

With the letter a label of the preparation was enclosed, translation of which is in Consul Bohr's communication. The address in the letter is that given on the label; wording of label is reproduced:

DEPURATIVO VEGETAL.
ESPECIFICO BRENOT.

Excelente purificador de la sangre, puramente vegetal, preparado con el jugo de las raices indianas por el procedimiento Alemán.

Es el mejor purificador conocido hasta el día; eficaz en la sifilis, lepra, manchas de la piel, úlceras, granulaciones, enfermedades secretas, debilidad

general, colores pálidos, reumatismo cronico, ácido úrico, enflaquecimiento, tiña, parálisis, y todas las enfermenades producidas por las impurezas de la sangre.

Dosis: Una cucharada en agua antes de las comidas, Niños medias dosis.

Prepared by the Pharmaceutical American Ass., Philadelphia, E. U. A., General Department, Broadway St., 16th North.

The reply of Secretary William B. Day under date of October 15th follows, and was addressed to the American Consul, Mr. Frank Bohr:

"Dear Sir:

"I have your letter of September 24th, enclosing a label of a patent medicine entitled 'Especifico Brenot' which is claimed to be prepared by the 'Pharmaceutical American Ass., Philadelphia, E. U. A., General Department, Broadway St., 16th North,' but which is really prepared by a local pharmacist of your city.

"I thank you very much for giving me this information. You are right in your surmise that our Association does not prepare this product and has nothing to do with it. In fact, our Association is a purely professional and scientific body, *which does not manufacture or deal in any medicinal substances whatever.*

"Unfortunately, we are not in a position to spend money to send a representative to Cuba to initiate legal proceedings, but I am sending your letter, including the label, to our Journal, and have asked the editor to send marked copies of the same when it appears in the Journal to our members in Cuba.

"I assume that the medical authorities in Cuba will be glad to make use of the material thus furnished in exposing this fraud.

"I enclose a copy of a letter that I am addressing to the Director de Sanidad, Secreteria de Sanidad y Beneficencia, Habana."

(Signed by Secretary Day.)

The letter of Secretary William B. Day to the Secretary of the "Board of Health," under date of October 15th, follows:

"Director de Sanidad,
Secreteria de Sanidad y Beneficencia, Habana, Cuba.

"Dear Sir:

"Mr. Frank Bohr, American Consul at Cienfuegos, has sent me a label of a patent medicine named 'Especifico Brenot' and claimed to be prepared of Indian roots by a German process and to be effective as a blood purifier for syphilis and other venereal diseases, as well as general debility, chronic rheumatism, etc.—having been for the past year extensively advertised and sold in the city named.

"This patent medicine is claimed to be 'prepared by the Pharmaceutical American Ass., Philadelphia, E. U. A.' but the Consul states that it is really prepared by Dr. José Fernandez Valdez, a pharmacist now established at the corner of Gacel and Castillo, Cienfuegos.

"I have addressed to the Consul an official protest of this infringement of our name. Our Association is a purely professional and scientific organization and does not manufacture or deal in any medicinal substances whatever.

"I assume that you will be pleased to make use of the material thus furnished in exposing this fraud."

(Signed by Secretary Day.)

This matter is brought to the attention of the members of the Association and made of record thereby. While the American Consul performed his duty it may not be out of place to express appreciation for his interest in advising Secretary Day. As far as the writer knows, this is the first time in the history of the organization (72 years) that such liberties were taken with its name. Whatever punishment may be meted out to the transgressor, he owes the Association an apology.

E. G. E.

THE PREPARATION, PROPERTIES, AND USES OF SILICO-DUODECITUNGSTIC ACID.*

II. THE USE OF THE ACID AS A VOLUMETRIC REAGENT FOR ALKALOIDS.†

BY EDWARD OSCAR NORTH‡ WITH GEORGE D. BEAL.

HISTORICAL.

In a preceding paper (1) the authors have described the method of preparation of silicoduodecitungstic acid by a simple and convenient method which yields a product of very definite and stable character. This acid, as prepared by the authors, was found to have the composition $4H_2O.SiO_2.12WO_3.5H_2O$. The composition of the normal potassium and ammonium salts was determined, as well as the composition of the salts formed by this acid with alkaloids in hydrochloric acid solution. For the sake of convenience, the acid will be referred to in this article as silicotungstic acid.

Goddefroy (2) was the first to call attention to the insolubility of alkaloidal silicotungstates. Bertrand later (3) published the results of a series of investigations, claiming that the work of Goddefroy was unknown to him at the time the work was begun, and alone (4) and with Javillier (5) he studied in detail the properties of salts of this type applying the acid in the quantitative precipitation of nicotine. Javillier (6) continued the study on the salts of coniine, atropine, sparteine, antipyrine, and pyramidone.

The first direct gravimetric method was described by Chapin (7), in which nicotine was precipitated from tobacco extracts and the precipitate ignited, the anhydride of the acid being weighed. Ferenz and David (8) used the acid for the qualitative detection of alkaloids; Rasmusson (9) determined atropine gravimetrically, applying a correction for the solubility of the atropine salt. Taigner (10), working with atropine, cocaine, and strychnine, found that all of their salts had the same general type formula, which has been confirmed by the authors for all of the monacid tertiary bases studied. Heiduschka and Wolff (11) have studied the proper conditions for the formation of the alkaloidal salts and Sindlinger and Mach have described a method for the determination of pyridine and nicotine in mixtures.

The authors, in their previous paper (*loc. cit.*), have shown that for the monacid tertiary bases, the salts have the type formula $4Alkaloid, 2H_2O.SiO_2.12WO_3$, and for the diacid tertiary bases, the type formula $2Alkaloid, 2H_2O.SiO_2.12WO_3$. They have also shown that towards methyl orange and methyl red the acid, in its neutralizing power towards inorganic bases, is tetrabasic.

EDITOR'S NOTE.—For Part I see October JOURNAL, pp. 889–898.

* Contribution from the Department of Chemistry of the University of Illinois.

† Read at the 72d Meeting of the American Pharmaceutical Association, Buffalo, New York, August 25–29, 1924.

‡ Abstracted from a thesis presented by Edward Oscar North in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Chemistry in the Graduate School of the University of Illinois.

THEORETICAL AND EXPERIMENTAL.

The usual methods for the quantitative determination of alkaloids in vegetable drugs or their preparations involve the separation of the alkaloid by the so-called "shaking-out process." In this procedure, advantage is taken of the solubility of the alkaloidal salts in water and of the free bases in the organic solvents which are immiscible with water. Following the purification of the alkaloid, it is determined quantitatively by evaporation of the immiscible solvent solution, when the residue is weighed, titrated alkalimetrically, or titrated with a standard solution of one of the alkaloidal precipitants such as potassium-mercuric iodide or iodine-potassium iodide.

Beal and Lewis (13) and Beal and Hamilton (14) have reviewed the literature of the "shaking-out" process, calling attention to the sources of error therein and have established optimum conditions for these extractions. In this connection attention was called to the fact that the number of extractions required for complete removal of alkaloid from either the aqueous or organic solvent phase of a system could not be calculated directly from the simple coefficient of distribution which would assume the absence of acid salts or hydrates of a base. They have also cited the experience of other investigators, together with their own, in which the difficulty of avoiding decomposition of the alkaloidal residue during the final removal of the solvent, especially chloroform, is shown.

In the alkalimetric determination of alkaloids, difficulty is experienced in the selection of a suitable indicator, since the alkaloids are not only weak bases but vary widely in their degree of basicity. McGill (15) and others have recently met with some success in the application of the hydrogen electrode and other methods of electrometric titration to these determinations.

Gordin (16) has precipitated various alkaloids from a solution containing a known volume of standard hydrochloric acid by means of a neutral reagent such as iodine-potassium iodide or potassium-mercuric iodide, finding that an equivalent quantity of acid is carried down by the precipitate. He, therefore, titrated acidimetrically the excess of the standard acid in the filtrate from this precipitate. This method was further studied by Kippenberger (17). Heikel (18) precipitated various alkaloids with a standard solution of potassium-mercuric iodide, determining the excess of reagent in the filtrate by titration with potassium cyanide and silver nitrate.

There are at least two objections to these last methods. The methods have, in the first place, the usual disadvantages attendant upon quantitative filtration and back titration. It is also an established fact that the greater number of alkaloidal precipitates of this character begin to decompose after a short time, with the accompanying liberation of iodine.

The contribution of the authors of this paper to the gravimetric determination of alkaloids has been in the way of standardizing the method of preparing silicotungstic acid and determining in some additional salts the constancy of their composition. They have attempted to devise a rapid volumetric method for general application in the determination of alkaloids which would as far as possible be independent of the degree of ionization of the base and upon which moderate variations in hydrogen-ion concentration would be without effect. The manner of formation of the alkaloidal silicotungstates suggested the possibility of a volumetric precipitation method.

Heiduschka and Wolff (*loc. cit.*) added an excess of a standard solution of silicotungstic acid to the alcoholic solution of the alkaloid, filtered off the precipitate so formed and determined the excess of the acid by titration with alkali. The majority of the alkaloidal silicotungstates are best precipitated from a rather strongly acid solution. The authors have therefore made a search for an indicator which will show the presence of an excess of silicotungstic acid in a solution.

Because of the fact that derivatives of tungstic acid may be reduced with the formation of lower oxides of tungsten having a blue color, attempts were at first made to use as an indicator a strong reducing agent such as titanous chloride or colorless ammonium sulphide. The solution of titanous chloride showed some promise. It cannot be used as an inside indicator since it will reduce even the precipitated silicotungstate. There is also some difficulty in the preservation of the reagent. As an outside indicator the results are fairly satisfactory, the end-point, a blue color, being rather faint. The ammonium sulphide could not be used with the acid solution in which precipitation took place.

The leuco bases of some blue or green dyestuffs, such as reduced malachite green and methylene blue, were next tried, with the idea that the color of the redeveloped dye would reinforce the color of the tungsten blue. Again only moderate success was met with, the endpoint being rather faint and the solutions of the leuco bases being very unstable in the presence of atmospheric oxygen.

When malachite green is dissolved in hydrochloric acid of moderate concentration, the solution instead of being bluish green in color has a tone which is a shade of reddish or brownish orange. The characteristic color of the dye is restored upon dilution with a large amount of water, but one drop of 0.01 molar silicotungstic acid in 200 cc. of 0.6 normal hydrochloric acid will at once restore the color of the indicator when one drop of each solution is placed on a porcelain test plate and the drops mixed. The best range of acidity for the proper behavior of the indicator lies between 0.25 and 1.5 normal hydrochloric acid.

Preparation of the Indicator.—Two grams of malachite green was dissolved in 300 cc. of 6 *N* hydrochloric acid.

Standardization of Silicotungstic Acid.—The molecular weight of the acid is 3006.—An approximately 0.01 molar solution was prepared by dissolving 30 grams of the acid in enough water to make 1000 cc. of solution. A known amount of pure cinchonine was dissolved in 200 cc. of 0.6 normal hydrochloric acid and the solution titrated with silicotungstic acid. After allowing the precipitate to settle, a drop of the *clear* supernatant liquid was removed to a spot plate by means of a glass tube having an internal diameter of 3 mm. A drop of the indicator solution was then added to this by means of a platinum wire loop of 1.5 to 2 mm. diameter, and the two drops mixed. While the alkaloid was present in solution the color of the mixed drops was deep yellow. With silicotungstic acid in excess the color was bluish green.

An endpoint with methyl red is obtained when four hydrogens of the acid have been neutralized. The acid solution was also standardized by titration with standard sodium hydroxide, using methyl red as the indicator.

The solution of the acid may also be standardized by evaporating a definite volume to dryness, igniting the residue and weighing the silicotungstic anhydride formed.

Volumetric Assay of Cinchona Bark.—The method used for the extraction of the mixed alkaloids was that proposed by Scoville (19) for the Tenth Revision of the United States Pharmacopœia. Five grams of powdered cinchona bark were placed in a 250-cc. flask with 15 cc. of water and 5 cc. of hydrochloric acid. After mixing, the contents were digested for 2 hours on the steam-bath, then cooled and 200 cc. of a mixture of 3 volumes of ether and 1 volume of chloroform added, and after thorough shaking 10 cc. of ammonia water. The mixture was then shaken frequently

during a period of 12 hours. After the drug had settled, 160 cc. of clear supernatant liquid were decanted into a separatory funnel and repeatedly shaken out with 2 normal sulphuric acid. The combined acid extracts were made alkaline with ammonia and shaken out with chloroform to complete extraction. The chloroform extract was drawn off through a small filter into a beaker and the chloroform evaporated on the steam-bath, expelling the last traces by means of alcohol.

Instead of weighing the alkaloidal residue it was softened with alcohol and dissolved in a measured volume of 0.1 normal sulphuric acid, and the excess of acid determined by titration with 0.02 normal sodium hydroxide solution, using methyl red as indicator.

Following the alkalimetric titration the solution was diluted to a volume of 200 cc. and 20 cc. of 6 normal hydrochloric acid added. The solution was then titrated with approximately 0.01 molar silicotungstic acid, using the same procedure as in standardizing against cinchonine, with malachite green hydrochloride as the indicator. In both the alkalimetric and silicotungstic acid titrations the value 309 was used as the average molecular weight of the mixed anhydrous alkaloids. The principal alkaloids of cinchona contain two atoms of tertiary nitrogen, but the basicity of one of these is so slight that in the ordinary alkalimetric titrations tne alkaloids are regarded as monobasic. Silicotungstic acid, however, reacts with both nitrogen atoms of these alkaloids.

TABLE I.

RESULTS OF THE ASSAY OF CINCHONA BARK.

No.	H_2SO_4 titration, Per cent.	Titration with $4H_2O.SiO_2.12WO_3$, Per cent.
1	5.70	5.85
2	5.67	5.73
3	5.92	5.60
4	5.67	5.47
5	5.62	5.50
6	5.76	5.68
Ave.	5.72	5.64

Volumetric Determination of Cinchona Alkaloids without Purification.—Obviously the original ether-chloroform extract of cinchona bark is unsuitable for the direct gravimetric determination of total alkaloids because of the presence of non-alkaloidal extractives and ammonia. The presence of this ammonia also makes it impossible to extract the mixed alkaloids by shaking out with measured volumes of standard acid, afterwards determining the excess of acid by titration. However, ammonium salts do not precipitate our reagent in acid solution and the ether-chloroform extraction followed by a shaking-out with sulphuric acid should give a protein-free solution. It, therefore, seemed possible to save much time and obviate a source of error by making a direct titration with silicotungstic acid in the sulfuric acid solution obtained as a result of the first series of shakings.

Accordingly in a new series of assays two 80-cc. portions of the ether-chloroform extract were withdrawn. One portion was treated according to the full U. S. P. method, the mixed alkaloids being weighed, titrated with sulphuric acid and silicotungstic acid. The other portion was extracted with 2 normal sulphuric acid, the combined extracts diluted with water to 200 cc. and 10 cc. of 12 normal hydrochloric acid added. This solution was then titrated with silicotungstic acid in the usual manner.

The volume of silicotungstic acid solution used in these titrations averages about 19 cc. The volume of standard sulphuric acid actually consumed is only about 4 cc. In spite of the fact that the excess of sulphuric acid is determined by titration

TABLE II.

No.	Gravimetric.	H_2SO_4 titration.	Titration with $4H_2O.SiO_2.12WO_3$.	Titration with $4H_2O.SiO_2.12WO_3$ without purification.
1	5.69	5.85	5.90	5.90
2	6.19	5.87	5.85	5.90
3	6.37	6.00	5.95	5.99
4	5.83	5.71	5.68	5.84
5	5.91	5.95	5.84	5.89
6	5.99	5.70	5.68	5.92
Ave.	6.00	5.84	5.82	5.91

with a much weaker alkali, there is a potential source of error in the measurement of the sulfuric acid which is greater than the possible error in the endpoint with the silicotungstic acid.

Various chemists have pointed out a possible source of error in both gravimetric and alkalimetric determinations of alkaloids due to the presence of ammonium salts in water solution dissolved in the immiscible solvent. On evaporation to dryness there is a possibility that the alkaloid, as a non-volatile base, will expel ammonia, forming an alkaloidal salt. White spots have frequently been observed in such residues which upon examination have proved to be the alkaloidal salt, as chloride or sulfate, entirely free from the ammonium radical. This will naturally give high results in the gravimetric assay, and, being neutral, will give low results in the alkalimetric titration.

The reaction with silicotungstic acid is independent of the presence of an acid forming a soluble salt, and such a form of contamination will not interfere in the proposed method of determination.

*Assay of Fluidextract of Cinchona.**—These preparations were assayed according to the Scoville modification previously mentioned. Five cc. of the fluidextract were mixed with 5 grams of purified sawdust in a 250-cc. flask and carefully dried on the steam-bath. This residue was then digested with hydrochloric acid and extracted in the same manner as cinchona bark. The chloroform residue was weighed, and titrated with sulphuric acid and sodium hydroxide, and the sulphuric acid extract titrated with silicotungstic acid as above.

TABLE III.

ASSAY OF FLUIDEXTRACT OF CINCHONA.

	Gravimetric Gms. per 100 cc.	H_2SO_4 titration Gms. per 100 cc.	Titration with $4H_2O.SiO_2.12WO_3$ Gms. per 100 cc.
Red cinchona	3.41	3.26	3.36
	3.29	3.32	3.39
Cinchona U. S. P.	3.34	3.21	3.36
	3.39	3.35	3.33

Assay of Nux Vomica.—This was assayed by the method of the U. S. P. IX, weighing the chloroform residue before the alkalimetric titration and titrating these solutions with silicotungstic acid after adding hydrochloric acid to the neutral solution. The sulphuric acid extract was also titrated as in the assay of cinchona.

* Samples of percolates of cinchona and of red cinchona were furnished by Parke, Davis and Company through the courtesy of Mr. F. O. Taylor.

TABLE IV.

ASSAY OF NUX VOMICA.

No.	Gravimetric.	H_2SO_4 titration.	Titration with $4H_2O.SiO_2.12WO_3$.	Titration with $4H_2O.SiO_2.12WO_3$ without purification.
1	3.08	2.49	3.06	....
2	2.64	2.09	2.75	....
3	2.54	1.85	2.41	....
4	2.62	2.38	2.88	....
5	....	....	....	3.56
6	....	....	....	3.52
7	....	....	....	3.34
8	....	....	....	3.40

Since the titrations with silicotungstic acid gave values which were very much higher than those by the alkalimetric method, the silicotungstic acid which had been standardized against cinchonine was titrated against pure strychnine and brucine.

TABLE V.

Wt. alkaloid.	Amt. by H_2SO_4 titration.	Amt. by $4H_2O.SiO_2.12WO_3$ titration.	Per cent recovery by $4H_2O.SiO_2.12WO_3$.
0.1017 Gm. cinchonine	.....	0.1018	100.0
0.2109 Gm. strychnine	0.2080	0.2492	118.1
0.2066 Gm. strychnine	0.2042	0.2430	117.5
0.2073 Gm. brucine	.....	0.2766	133.4
0.2054 Gm. brucine	.....	0.2715	132.2
0.2065 Gm. brucine	0.2070	.....	.....
0.2090 Gm. brucine	0.2100	.....	.....

The apparent result in the brucine titration was 32.8% too high and for strychnine 17.8% too high. The average for both was 25.3%. With this correction the average value in the assay of the drug became 2.74%, a very fair agreement with the gravimetric assay.

Assay of Belladonna Leaves.—Belladonna leaves in No. 60 powder were extracted according to the method of the U. S. P. IX, and the final chloroformic residue weighed and titrated with sulphuric acid and sodium hydroxide, using methyl red as indicator. Other portions of the drug were analyzed by titrating the sulphuric acid solution with silicotungstic acid before the final purification as in the assay of cinchona bark. Because of the solubility of atropine silicotungstate in dilute acids (9), the sulphuric acid extract was titrated without dilution with water, and a correction of 0.0048 Gm. of atropine per 100 cc. of solution was made.

TABLE VI.

ASSAY OF BELLADONNA ROOT.

No.	Gravimetric.	H_2SO_4 titration.	Titration with $4H_2O.SiO_2.12WO_3$ without purification.
1	0.410	0.431	.....
2	0.415	0.428	.....
3	.....	.....	0.420
4	.....	.....	0.440
5	.....	.....	0.445
6	.....	.....	0.445

Assay of Stramonium Leaves.—Stramonium leaves were assayed in the same manner as the belladonna leaves above, determining the total alkaloids volumetrically by the U. S. P. process and also by titration with silicotungstic acid without the final purification. The same correction was applied as in the assay of belladonna leaves.

TABLE VII.

ASSAY OF STRAMONIUM LEAVES.

No.	H_2SO_4 titration, Per cent.	Titration with $4H_2O.SiO_2.12WO_3$ without final purification. Per cent.
1	.....	0.456
2	.....	0.466
3	0.440	.....
4	0.446	.....

Assay of Hydrastis Root.—Hydrastis root was assayed gravimetrically according to the method of the U. S. P. IX, and by silicotungstic acid without the final purification.

TABLE VIII.

ASSAY OF HYDRASTIS ROOT.

No.	U. S. P. Gravimetric, Per cent.	Titration with $4H_2O.SiO_2.12WO_3$ without final purification. Per cent.
1	3.44	....
2	3.52	....
3	....	3.09
4	....	3.15
5	....	3.32
6	....	3.29

Realizing the possibility of error due to the solubility of the alkaloidal silicotungstates, Nos. 5 and 6 were titrated by adding the silicotungstic acid in excess, allowing the precipitate to stand for thirty minutes, then filtering and washing with 1% hydrochloric acid. The excess of silicotungstic acid in the filtrate was titrated with a standard solution of cinchonine hydrochloride.

A Source of Error in the Method of Assay by Aliquot Parts.—In practically all of the alkaloidal assays of the U. S. P. IX, the alkaloids are extracted in the free

TABLE IX.

LOSS BY EVAPORATION OF PROLLIUS SOLUTION IN CINCHONA ASSAYS.

No.	Weight of flask and solution, before.	Weight of flask and solution, after.	Loss.
1	324.5	324.0	0.5
2	331.5	331.0	0.5
3	319.0	318.5	0.5
4	305.1	304.7	0.4
5	320.8	320.8	0.0
6	312.7	312.4	0.3
7	325.4	323.8	1.6
8	305.1	304.7	0.4
9	325.0	324.5	0.5
10	310.0	310.0	0.0
11	326.5	324.8	1.7
12	317.0	317.0	0.0
13	311.0	311.0	0.0
14	316.0	315.0	1.0
15	305.5	304.5	1.0
16	318.0	315.0	3.0
		Ave.	0.7 Gm.

state by macerating with some modification of Prollius mixture. Following this maceration, the drug is agglutinated, if necessary, by the addition of a small

amount of water and a definite volume of the non-aqueous solution decanted. The final calculation is based upon the supposed relationship of this volume of solution to the volume of liquid with which the drug was originally macerated. Unless perfectly stoppered vessels are used for the maceration, there is inevitably some loss of solvent during maceration, an effect which is oftentimes intensified by shaking. For this reason we have made it our practice to weigh the extraction flask at the beginning of the maceration and just before the removal of the aliquot, making up to the original weight if necessary by adding more of the non-aqueous solvent. We are of the opinion that the Pharmacopœia should contain a cautionary statement regarding this loss. The foregoing table contains the weights obtained in a series of extractions of cinchona, the macerations being made in Erlenmeyer flasks having well-fitting ground glass stoppers.

SUMMARY.

1. Aqueous solutions of silicotungstic acid restore the green color to an orange-colored solution of malachite green in hydrochloric acid.

2. Using the hydrochloric acid solution of malachite green as an outside indicator, it has been found possible to titrate alkaloidal salts with standard solutions of silicotungstic acid in the presence of free hydrochloric or sulphuric acid.

3. The results so obtained by slightly modifying the U. S. P. assay processes compare favorably with those obtained by the official method.

4. It has been found possible to materially shorten the official methods by titrating the first sulphuric acid extract with silicotungstic acid.

5. Attention is called to the possibility of losses of solvent in the initial extraction of the drug in the official assay processes.

6. A further study is being made of the possibilities of this reagent in the volumetric determination of alkaloids.

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URBANA, ILLINOIS,
AUGUST, 1924.

ABSTRACT OF DISCUSSION.

J. P. Snyder emphasized the importance of the paper. It seemed to him that the method might be utilized for the determination of alkaloids in tablets; he said there was not at present an

ideal process, and hoped that Dr. Beal's method may prove to be well adapted, for example, in the determination of morphine in tablets.

Mr. L. E. Warren said if future results show up as satisfactory as indicated, this will prove the most important contribution to alkaloidal science since the discovery of Lloyd's reagent. He asked whether the reagent was adaptable to the recovery of alkaloids from plant extracts on a large scale.

To the first question, Dr. Beal replied he thought by a modification of the method it would prove satisfactory in the morphine determination; the results in belladonna by this method checked within two or three hundreths of one per cent.

In reply to the other question, Dr. Beal thought the method was applicable; he had separated pure strychnine in toxicological work.

TOXICITY OF QUININE-ASPIRIN MIXTURE.*

BY E. A. RUDDIMAN AND C. F. LANWERMEYER.

From time to time articles have appeared in pharmaceutical and medical journals relative to the toxicity of mixtures of quinine salts with organic acids. Professor Biddle (*Journal Am. Chem. Soc.*, XXXIV, 500, 1912) states that salts of cinchonine and quinine in solution with hydrochloric or sulphuric acid change more slowly at 36° C. than at 98° to 102° C. and the change at the latter temperature is very slight in 48 hours. With acetic or propionic acid the change is much more rapid, particularly if heated. Much of his work was done with the product formed by heating quinine with acetic acid. He was chiefly concerned in isolating and identifying quinotoxin and cinchotoxin. He bases his statements about toxicity on Hildebrandt's work.

Hildebrandt (*Arch. Exp. Path. and Pharmacol.*, 59, 127, 1908) produced his cinchotoxin by the action of acetic acid on cinchonine. This he administered to white mice. He says that 0.5 cc. of a 0.3 per cent. solution given to mice weighing 13 grams will produce severe cramps from which they recover, but die in a few days. This dose is equivalent to 0.00011 Gm. per gram body weight. Later on he says that the toxic dose is 0.00015 per gram body weight. The article does not state whether the weight of substance given is pure cinchotoxin or the product resulting from heating cinchonine with acetic acid. According to this worker quinotoxin is not as toxic as cinchotoxin.

Still earlier, in 1895, Miller and Rhode (*Ber. der Deutsche Chem. Ges.* XXVIII, 1058) worked with these products and named them cinchotoxin and quinotoxin, claiming that they are extraordinarily poisonous and the alkaloids lose their antipyretic effect.

Doctor Reid Hunt (*Arch. Inernat. de Pharmacol.*, XII, 105, 1904) gave to a cat weighing 800 grams, by subcutaneous injection, 5 cc. of a 0.3 per cent. solution of cinchotoxin which caused severe cramps and death in a few minutes. The same sized dose of cinchonine produced only vomiting and recovery followed.

The work here recorded was not for the purpose of determining the presence of quinotoxin, but for the purpose of determining whether the mixture of quinine and aspirin, after standing sufficiently long to mass and become brown-red, is any more toxic than the mixture when first made. The results obtained are not conclusive, but on the whole are fairly satisfactory as far as they go.

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* Scientific Section, A. Ph. A., Buffalo meeting, 1924.

Incidentally it is interesting to note the length of time required for mixtures to change to a dark, clear, brown-red, viscid mass under different conditions. Biddle states that the formation of quinotoxin may be judged by the dark discoloration. Miller and Rhode also refer to this brown-red mass as being the toxic mixture.

The powder first begins to stick together, then cake and become hard. Contraction commences and goes on until the mass occupies one-half to one-third of the original volume. About the same time the color becomes dirty white, a dirty yellow, yellow, yellow-brown and brown-red. In contracting, the mixture recedes from the sides of the bottle, leaving an upright cylinder. This gradually softens and becomes a partially translucent, granular mass, which settles down and changes to a clear brown-red viscid mass.

Mixtures were made of aspirin with each one of the following—quinine sulphate, quinine bisulphate, quinine hydrochloride, quinine alkaloid, quinidine sulphate, quinidine alkaloid, cinchonine sulphate, cinchonine alkaloid, cinchonidine sulphate and cinchonidine alkaloid.

In each combination the aspirin was mixed with the crystallized alkaloidal compound; with the crystallized alkaloidal compound and citric acid; and with the dried alkaloidal compound, the loss in drying of which was made up by the addition of starch. Then portions of these were kept in corked bottles in the light, in corked bottles in the dark, in open bottles in the dark, in capsules in open bottles in the dark and in capsules in corked bottles in the dark. These samples have now been under observation for six months. The mixtures were made of equal weights of alkaloidal compound and aspirin and in those samples where citric acid was added, one-fifth as much acid as mixture was used. The samples of the dried alkaloidal compound in which the loss in weight was made up by the addition of starch gave practically the same results as where the crystalline alkaloidal substance was used or slightly less. The addition of citric acid increased the reaction in some cases and in others had practically no effect.

QUININE SULPHATE WITH ASPIRIN.

The mixture of crystallized quinine sulphate with aspirin caked slightly in six months, but the cake could be easily broken to a powder. Keeping in the different conditions enumerated above seemed to cause no difference in the appearance. The samples in which the sulphate had been dried were all in a good powdered condition at the end of six months. The mixtures containing citric acid had all caked, and contracted and assumed a dirty yellowish color; the samples in open bottles had changed most and the samples exposed to light came next. An old sample of two grains of crystallized sulphate with 3 grains of aspirin which had been kept for one and a half years had caked and contracted some, but had not begun to liquefy.

QUININE BISULPHATE WITH ASPIRIN.

All of the samples of aspirin with quinine bisulphate, crystallized, dried, or mixed with citric acid, kept under the conditions named above, changed but little in six months. The sample mixed with citric acid and kept in the light had turned to a yellowish color and caked some so that it would not jar to a complete powder. The other samples were not discolored or caked. An old mixture of two grains of quinine bisulphate and three grains of aspirin, which had been kept for a year and a half, had caked and become slightly discolored, but had not begun to contract.

QUININE ALKALOID AND QUININE HYDROCHLORIDE WITH ASPIRIN.

The mixture of quinine alkaloid and aspirin, exposed to the light, had changed to a dark brown opaque mass in four months and to a brown-red, transparent viscid mass in six months. A similar sample kept in the dark had not changed quite as much. Samples exposed to air, but kept in the dark, changed still less.

Samples of quinine hydrochloride, crystallized, dried, or mixed with citric acid, exposed to the various conditions, in general resembled the quinine sulphate sample, but had changed a little more.

QUINIDINE ALKALOID AND QUINIDINE SULPHATE WITH ASPIRIN.

Samples of quinidine sulphate, exposed to the various conditions, had in general changed considerably more than the quinine sulphate samples. In fact, the samples of the crystallized salt with aspirin, exposed to the light, was partly liquefied.

Samples of quinidine alkaloid with aspirin did not change as much as quinine alkaloid with aspirin. Those exposed to air massed and became yellow, occupying about one-third of the original volume. Samples in corked containers caked a little, but not to the point of shrinking.

Samples of cinchonine sulphate with aspirin and of cinchonine alkaloid with aspirin were very similar to the corresponding mixtures of quinine sulphate and quinine alkaloid. Samples containing cinchonidine sulphate with aspirin were similar to the corresponding quinine mixtures, but those containing cinchonidine alkaloid with aspirin had not changed as much as the corresponding quinine mixtures.

For testing the toxicity of the quinine-aspirin mixture the animal chosen was the frog because it is easily obtained, easily handled and quite susceptible. The solution was injected into the lymph sac underneath the tongue and the time noted before death.

Before attempting any experiments with the mixture of quinine and aspirin which had changed to a soft sticky mass of a dark reddish color, it was necessary to determine the toxicity of quinine alone, of aspirin alone, of a fresh mixture of quinine and aspirin, and also the available solvents. The question of solvent was an important one. Water does not dissolve aspirin readily, but still sufficiently so that it could be used and it could also be used for quinine bisulphate, but it would not dissolve the product formed by the reaction of quinine and aspirin on standing. Alcohol will dissolve all three, but the solution of the supposed toxic mixture cannot be diluted much with water without giving a heavy precipitate, and strong alcohol itself is quite fatal in quantities over 0.01 cc. per gram body weight as seen in Table I.

TABLE I.—EFFECT OF ALCOHOL.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Cc. per Gm. body weight.	Results.
32	37	0.9	0.025	Dead in 1 hour
65	38	0.76	0.02	Dead in 1 hour
66	44	0.44	0.01	Alive after 24 hours

Ethylene Glycol.—It was found that ethylene glycol is a good solvent for aspirin, for quinine and its salts, and for the old quinine-aspirin mixture. A solution of each of these can be diluted with one-third of its volume with water without precipitation. It is less toxic than alcohol, as shown in Table II.

TABLE II.—EFFECT OF ETHYLENE GLYCOL.

Frog number.	Wt. in Gm. of Frog.	Cc. given.	Cc. per Gm. body weight.	Results.
30	40	1.0	0.025	Alive after 24 hours
33	28	0.56	0.02	Alive after 24 hours
63	44	1.32	0.03	Alive after 24 hours
64	47	1.9	0.04	Alive after 24 hours
84	25	1.00	0.04	Dead in 3 hours
85	24	1.2	0.05	Dead in 3 hours

The minimum toxic dose of ethylene glycol is approximately 0.04 cc.

Water.—To see if the injection of a reasonable amount of water would prove deleterious, 0.06 and 0.08 cc. per gram body weight were injected into two frogs without apparent ill effect.

Aspirin.—To determine the toxic dose of aspirin, a one per cent. solution of aspirin in a one per cent. solution of sodium citrate, a two per cent. solution in a two per cent. solution of sodium citrate, and a two per cent. solution in a mixture of three parts of ethylene glycol and one part of water were used as shown in Table III.

TABLE III.—EFFECT OF ASPIRIN.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Gm. aspirin per Gm. body weight of frog.	Results.
11	32	0.32 (*a*)	0.0001	Alive after 24 hours
12	27	0.54 (*a*)	0.0002	Alive after 24 hours
24	33	0.50 (*b*)	0.0003	Alive after 24 hours
31	48	0.72 (*c*)	0.0003	Alive after 24 hours
27	27.5	0.48 (*b*)	0.00035	Alive after 24 hours
88	23	0.36 (*c*)	0.00035	Alive after 24 hours
22	22	0.44 (*b*)	0.0004	Dead in 1 hour
34	32	0.64 (*c*)	0.0004	Dead in 1 hour
86	31	0.62 (*c*)	0.0004	Dead in 20 hours
23	23	0.96 (*b*)	0.0008	Dead in 30 minutes

(*a*) 1% solution in 1% solution sodium citrate.
(*b*) 2% solution in 4% solution sodium citrate.
(*c*) 2% solution in 2% solution of 75% ethylene glycol.

The minimum toxic dose of aspirin is close to 0.0004 Gm. per gram body weight of the frog.

Quinine.—In testing the toxicity of quinine, the bisulphate was used because of its solubility in water. It was given dissolved in water and also dissolved in a mixture of ethylene glycol three parts and water one part, as shown in Table IV.

TABLE IV.—EFFECT OF QUININE BISULPHATE.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Gm. quin. bisulph. per Gm. body weight of frog.	Results.
5	34.5	0.18 (*a*)	0.00005	Alive after 24 hours
7	39.5	0.32 (*a*)	0.00008	Alive after 24 hours
6	39	0.35 (*a*)	0.00009	Alive after 24 hours
8	32	0.32 (*a*)	0.0001	Alive after 24 hours
74	31	0.31 (*c*)	0.0001	Alive after 24 hours
4	33	0.33 (*a*)	0.0001	Dead in 1 hour
18	28	0.42 (*a*)	0.00015	Alive after 24 hours
35	45	0.34 (*b*)	0.00015	Alive after 24 hours
10	35	0.53 (*a*)	0.00015	Dead in 12 hours
72	37	0.56 (*b*)	0.00015	Dead in 2 hours
26	33	0.53 (*a*)	0.00016	Dead in ½ hour

87	30	0.51 (*c*)	0.00017	Dead in 20 hours
44	33	0.32 (*b*)	0.00019	Dead in 1/2 hour
9	33	0.66 (*a*)	0.0002	Dead in 1/2 hour
19	27	0.54 (*a*)	0.0002	Dead in 40 min.
36	43	0.43 (*b*)	0.0002	Dead in 1 hour

(*a*) 1% solution of quinine bisulphate in water.
(*b*) 2% solution of quinine bisulphate in 75% ethylene glycol.
(*c*) 1% solution of quinine bisulphate in 75% ethylene glycol.

These results indicate that 0.00015 Gm. of quinine bisulphate per gram body weight of the frog is the minimum toxic dose. 0.00015 Gm. of quinine bisulphate is equivalent to 0.000104 Gm. quinine alkaloid.

FRESHLY MADE QUININE-ASPIRIN MIXTURE.

A fresh mixture of two parts of quinine alkaloid with three parts of aspirin was prepared. Of this a one per cent. solution in a mixture of ethylene glycol three parts and water one part was made. The effect of the injection is shown in Table V.

TABLE V.—EFFECT OF FRESH QUININE ALKALOID-ASPIRIN MIXTURE.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Gm. of mixture per Gm. body weight of frog.	Results.
88	20	0.3	0.00015	Alive after 24 hours
93	29	0.435	0.00015	Alive after 24 hours
92	28	0.45	0.00016	Alive after 24 hours
94	38	0.608	0.00016	Alive after 24 hours
91	26	0.45	0.00017	Dead in 1 1/2 hours
95	29	0.493	0.00017	Dead in 1 1/2 hours
89	23	0.42	0.00018	Dead in 1 1/2 hours
90	19	0.38	0.0002	Dead in 1/2 hour

The minimum fatal dose of the mixture is approximately 0.00017 which is equivalent to 0.000068 Gm. of quinine alkaloid.

The first experiments were made with a mixture of 2 Gm. quinine bisulphate with 3 Gm. of aspirin, using a 2 per cent. solution in 1 part of water with 3 parts of ethylene glycol. The results are shown in Table VI.

TABLE VI.—FRESH QUININE BISULPHATE-ASPIRIN MIXTURE.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Gm. mixt. per Gm. body weight.	Results.
39	47	0.24	0.0001	Alive after 24 hours
38	50	0.5	0.0002	Alive after 24 hours
69	35	0.35	0.0002	Alive after 24 hours
70	38	0.48	0.00025	Alive after 24 hours
78	35	0.46	0.00026	Dead in 2 hours
79	34	0.36	0.00027	Alive after 24 hours
80	28	0.4	0.00028	Dead in 2 hours
77	24	0.35	0.00029	Dead in 1 hour
37	39	0.59	0.0003	Dead in 45 min.

The fatal dose of this fresh mixture is about 0.00026 Gm. per Gm. body weight of frog. The weight of quinine bisulphate in this is 0.000104 Gm. which is equivalent to 0.0000717 Gm. of quinine alkaloid.

OLD QUININE-ASPIRIN MIXTURE.

The mixture of quinine and aspirin which was supposed to contain quinotoxin was made December 22, 1922, by mixing quinine alkaloid two grains with aspirin three grains. It had been kept in capsules in a rather loosely stoppered bottle.

At the time of using it was a soft sticky mass of a dark brown-red color and had quite a strong acetic odor. A one per cent. solution of this mixture in glycol-water solution was used. The results are shown in Table VII.

TABLE VII.—OLD QUININE ALKALOID-ASPIRIN MIXTURE.

Frog number.	Wt. in Gm. of frog.	Cc. given.	Gm. mixt. per Gm. body weight.	Results.
41	35	0.35	0.0001	Alive after 24 hours
68	30	0.3	0.0001	Alive after 24 hours
67	27	0.41	0.00015	Alive after 24 hours
52	39	0.59	0.00015	Dead in 1 hour
46	36	0.55	0.00016	Dead in 3 hours
50	41	0.66	0.00016	Dead in 1 hour
73	31	0.53	0.00017	Alive after 24 hours
48	33	0.56	0.00017	Dead in 3 hours
75	33	0.6	0.00018	Dead in 1 hour
42	44	0.84	0.00019	Dead in 6 hours
76	30	0.57	0.00019	Dead in 1 hour
40	37	0.74	0.0002	Dead in 1 hour
71	35	0.7	0.0002	Dead in 1 hour

The toxic dose of the old quinine-aspirin mixture is approximately 0.00016 Gm. Forty per cent. of the original mixture was quinine alkaloid. Forty per cent. of 0.00016 is 0.000064, corresponding to the quinine in the original mixture.

From the foregoing we see that the approximate minimum fatal dose per gram body weight of the frog is for

Aspirin	0.0004 Gm.	Fresh Quinine Bisulphate-Aspirin Mixture	0.000104
Quinine Bisulphate	0.00015	or its equivalent in	
or its equivalent in		Quinine Alkaloid	0.0000701
Quinine Alkaloid	0.000104	Old Quinine Alkaloid-Aspirin	0.00016
Fresh Quinine Alkaloid-Aspirin		Mixture or its equivalent in	
Mixture	0.00017	Quinine Alkaloid	0.000064
or its equivalent in			
Quinine Alkaloid	0.000068		

Comparing the doses of quinine alkaloid represented in the last three mixtures, we find them running very close to one another, 0.000068, 0.0000701, 0.000064.

Comparing the doses of the fresh quinine alkaloid-aspirin mixture and the old mixture, 0.00017 and 0.00016, we find that they come remarkably close and we are forced to the conclusion that the old mixture has practically the identical toxicity as the fresh mixture. As the dose of the quinine alkaloid equivalent of the quinine bisulphate given is a little larger than the quinine alkaloid equivalent in the mixtures, it is probably that aspirin increases the toxicity of quinine to some extent.

SUMMARY.

I. Mixtures of aspirin with quinine sulphate or quinine bisulphate do not change much in appearance in six months.

II. A mixture of aspirin with quinine alkaloid will change much more quickly than with the sulphate.

III. Aspirin seems to increase the toxicity of quinine a little.

IV. The old mixture of quinine and aspirin which has changed to a brown-red mass is no more toxic than the fresh mixture.

ABSTRACT OF DISCUSSION.

A. H. Clark inquired relative to the toxicity of aspirin in mixture with quinine and regard-

ing relative toxicity of old and freshly prepared quinine and aspirin mixture. The author replied that there is very little difference in the toxicity.

I. M. Kolthoff asked whether the color of the mixture changed more rapidly in the light than when kept in a dark place and whether a chemical change took place when the color darkened.

To the first question he replied that there seemed to be a variance and to the other that he did not go into the chemical examination of the mixture. In answer to a question by J. C. Munch, he replied that about one hundred frogs had been used in the experimentation, and at room temperature.

W. H. Zeigler said that clinically mixtures of quinine and aspirin had been found toxic, *i. e.*, reported so by physicians. He asked Dr. Ruddiman if he intended to continue the work and if so he hoped that warm-blooded animals would be used. The author replied that this was his intention. In his opinion the toxic symptoms induced by the mixture were due to the idiosyncrasy of persons to that mixture—there are persons who have an idiosyncrasy for quinine.

Various questions were asked relative to methods employed in mixing; to all of these the author replied and results are shown in the paper. Chairman Snyder hoped that experimentation with mixture on warm-blooded animals would be presented in a paper by the author next year, so that the question of toxicity of this mixture, which has been discussed for a number of years, may be settled.

MODIFICATION OF COW'S MILK FOR INFANT FEEDING.*

BY ELIZABETH GATES AND WYLY M. BILLING.

There will be no dispute of the statement that the best food for normal infants is human milk. This is an axiom with the medical profession. But in many cases human milk is not available, and the physician must do what he can with cow's milk, a food perfect for the calf, but very imperfectly adapted to the infant. Its chief disadvantages are (1) the difference in ratio of fats, carbohydrates and proteins from human milk, (2) its greater acidity, and (3) its tendency to form large indigestible curds in the stomach.

The percentage composition of human and cow's milk as taken from Thorpe[1] is as follows:

	Water.	Fat.	Sugar.	Casein.	Albumen.	Ash.
Cow's milk	87.25	3.75	4.75	3.00	0.40	0.75
Human milk	88.20	3.30	6.80	1.00	0.50	0.20

The most serious difference lies in the percentage of casein, which is the most difficult of the ingredients to digest. This difference is usually overcome by diluting the milk, the dilution varying with the age of the infant. The amount of sugar in cow's milk is low, so it is always necessary to add sugar, and even more necessary if the milk is diluted. If the fat percentage falls too low, it can be brought up by the addition of cream. Although the ash content of cow's milk is so much higher than that of human milk, there is some difference in the relative amounts of salts present. The following comparison, taken from Hess,[2] shows the difference in 100 parts of ash:

	K_2O.	Na_2O.	CaO.	MgO.	F_2O_3.	P_2O_5.	Cl.
Human milk	30.1	13.7	13.5	1.7	0.17	12.7	21.8
Cow's milk	22.14	15.9	20.05	2.63	0.04	24.7	21.27

According to this table, it can be seen that on dilution it is possible to reduce the amounts of potassium and sodium in cow's milk below that of human milk, and since these salts are very necessary, it would seem best, at least for diluted milk, to

* Scientific Section, A. Ph. A., Buffalo meeting, 1924.

add small quantities of sodium and potassium salts. An excess of salts does no harm because the surplus is not absorbed. Although the amount of iron in cow's milk is lower than that in human milk, neither kind of milk furnishes sufficient iron for the infant, so that for the first year it must draw upon the reserve of iron already stored in its body.

The second and third disadvantages of cow's milk, its acidity and its tendency to form large indigestible curds in the stomach, are often overcome simultaneously by the addition of bicarbonates, lime water, etc. Although these are expedients long familiar to every physician, it is only within the last few years that the theory of their action has been studied.

Comparative tests of cow's milk and human milk show that the curds from human milk are fine, flocculent and soft, so that they offer a maximum surface to the action of the digestive juices of the stomach with a minimum of resistance. On the other hand, the curds from cow's milk are quite large and tough, and are so hard that it is difficult for the gastric juices to penetrate them. Terry[3] has made an extensive study of milk curd formation and its modification. His conclusions, based on experiments *in vitro*, may be briefly summarized. The curd in milk results from the action of both rennin and calcium-ion on the caseinogen, the mother substance of casein. Rennin alone will not coagulate caseinogen, since it is a proteolytic enzyme, not a coagulating enzyme. The caseinogen is transformed by rennin to paracasein, which in the presence of calcium salts is insoluble, and precipitates out, in curds, as calcium paracaseinate. The curds of nascent calcium paracaseinate have a powerful coalescing property when just formed so that, if formed quickly, the small curds tend to coalesce into one or two large masses. However, this coalescing property is soon lost, so that if the curds are formed slowly no large proportion of them possesses this coalescing property at any one time, and the small curds remain distinct. Any substance or process which slows the formation of the curds will therefore cause them to be smaller and more digestible. The usual methods of milk modification are:

(1) Dilution with water
(2) Use of gruels and carbohydrates
(3) Boiling
(4) Use of citrates
(5) Use of alkalies

Since the dilution has to be governed by the amount of food which is needed by the infant and by the amount he is physically able to take care of, it is not often practical to dilute the milk enough to increase the time required for curding. Gruels modify the curds because of their protective colloidal action. Sugars do not affect the speed of curd formation appreciably, but do affect the quality of the curds. Of the three sugars, lactose, maltose and sucrose, lactose has the most favorable effect upon the curds. Boiling the milk modifies the curds, but it is open to the objection that it may also destroy the vitamins. Sodium citrate and the alkalies modify the curd formation because they withdraw some of the calcium-ion from the solution, thus reducing the proportions of one of the components of the reaction. For example, the action of sodium bicarbonate is

$$NaHCO_3 + Ca(H_2PO_4)_2 \longrightarrow CaHPO_4 + NaH_2PO_4 + H_2O + CO_2.$$

In this way the soluble primary calcium phosphate, of which cow's milk contains an excess, is converted into the insoluble secondary salt, thus withdrawing calcium-

ion from solution. Lime water acts in a similar way because of its hydroxide radical and actually decreases the amount of calcium-ion present.

$$Ca(OH)_2 + Ca(H_2PO_4)_2 \longrightarrow 2CaHPO_4 + 2H_2O$$

Since cow's milk contains an excess of calcium salts, and since the large curds are caused to form by that excess, there is no justification for the addition of calcium salts to cow's milk. The addition of calcium salts is also not advisable because according to Bosworth,[4] "any increase in the amount of soluble calcium in milk also increases the possibility of the production of insoluble calcium soaps, which soaps may cause constipation." These soaps also withdraw needed fats from the metabolism.

It is interesting to note that several of Terry's observations as to the character of the curds formed by different modification methods were duplicated *in vivo* by Brenneman.[5] He "obtained the coöperation of a young adult who could empty the stomach of its contents by digital irritation of the fauces," and in this way was able to examine the stomach contents in their natural condition. His conclusions as to the type of curd produced by the various means of modification closely paralleled those of Terry.

From the above considerations it will be seen that an ideal milk modification mixture would satisfy the following requirements: (1) It should contain sugar to make up the deficiency in cow's milk; (2) it should contain salts to increase the sodium and potassium content; (3) it should partially neutralize the excess acidity, and (4) it should contain some milk curd modifier. Lactose should be used to supply the sugar deficit, since it gives the most desirable curds and has the advantage of a slight laxative action. Of the milk curd modifiers, sodium citrate, sodium bicarbonate and lime water seem to be the best. Lime water is the least practical of the three because so much of it has to be added to the milk. Sodium bicarbonate possesses the advantage over sodium citrate in that it also tends to neutralize the acidity. The addition of sodium bicarbonate and small amounts of sodium chloride and potassium bicarbonate also brings up the proportion of sodium and potassium in cow's milk.

EXPERIMENTAL STUDIES.

From a comparison of the analyses of cow's milk and that of human milk, it was ascertained that when one ounce of cow's milk was diluted with an equal volume of water it was necessary to add $17^1/_2$ grains of milk sugar in order to bring up the sugar content of the diluted milk to that of human milk.

Proceeding on this basis various other agents which are commonly employed in the modification of cow's milk were added in varying proportions. The effect of these combinations upon the length of time required for the curding of the milk and upon the character of the curd formed is shown in the tables given herewith.

The curding time recorded in the tables was determined in the following manner: Five cc. of rennin solution N. F. IV were added to four fluidounces of cow's milk which was maintained at body temperature (37.5° C.) until the curd formed separated from the walls of the container upon tilting. The time elapsing between the addition of the rennin and the formation of this curd is that recorded in the tables.

The relative toughness of the curds formed is indicated by the number of plus signs. These signs afford a rough estimate of the relative resistance to slicing by a glass stirring rod.

Tables II and III show the results obtained with other samples of whole milk of different age and of different curding time. It must be noted that there is a material variation in the curding time of the samples of cow's milk obtained from different sources and of different ages.

Since the effect of the modifier in delaying the curding time is a proportionate action there will necessarily be a less pronounced effect upon milk which has normally a short curding time than upon a sample of milk in which the normal curding time is longer. For instance, it will be observed that the normal curding time in the control in Table I is 4.5 minutes. The addition of the modifier in Experiment 1 delayed this to 13 minutes or 290%. In Table III the normal curding time of the control was 3.5 minutes. The addition of the modifying agents as used in Experiment 18, which were identical with those used in Experiment 1 prolonged the curding time to 6.6 minutes.

TABLE I.

Expt. No.	Formula modifier in grains. Lactose.	NaCl.	$NaHCO_3$.	$KHCO_3$.	Other.	Curd time.	Character of curd.	Time / Control	Kind of milk.	
1	35	1/6	1/2	1/12	.....	13	+	2.9	Whole	
2	26	1/6	1/2	1/12	1 1/2 $CaCO_3$, 1/6 Ca. L. Phos.	9.5	++	2.1	Whole	
3	..	..	..	..	.....	4.5	+++	1.0	Whole	(Control)
4	35	1/6	1/2	1/12	.....	13	+	2.9	Skim	
5	26	1/6	1/2	1/12	1 1/2 $CaCO_3$, 1/6 Ca. L. Phos.	10.7	++	2.4	Skim	
6	..	..	..	..	.....	4.7	+++	1.0	Skim	(Control)
7	35	1/6	1/2	1/12	1 1/2 $CaCO_3$	9.5	++	2.1	Whole	
8	35	1/6	1/2	1/12	1/6 Ca. L. Phos.	7.6	+++	1.7	Whole	
9	35	1/6	1/2	1/12	1 1/2 $CaCO_3$, 1/6 Ca. L. Phos.	9.0	++	2.0	Whole	
10	35	1/6	1/2	1/12	1 teasp. lime water	11.0	++	2.5	Whole	
11	35	1/6	1/2	1/12	1/10 $NaHPO_4$	14.0	+	3.1	Whole	
12	35	1/6	1/2	1/12	1 teasp. lime water, 1/10 Na_2HPO_4	12.0	+	2.6	Whole	
13	..	..	..	..	1 gram maltose, 1 gram dextrin	6.7	+++	1.5	Whole	

Ca. L. Phos. = Calcium Lacto Phosphate.

$\frac{\text{Time}}{\text{Control}}$ = Ratio of delayed curding time to the normal curding time.

TABLE II.

Expt. No.	Formula modifier in grains. Lactose.	NaCl.	$NaHCO_3$.	$KHCO_3$.	Other.	Curd time.	Character of curd.	Time / Control	Kind of milk.	
14	26	1/6	1/2	1/12	1/2 $CaCO_3$, 1/6 Ca. L. Phos.	3.9	++	1.3	Whole	
15	35	1/6	1/2	1/12	.....	5.4	+	1.8	Whole	
16	..	..	..	..	.....	3.0	+++	1.0	Whole	(Control)

TABLE III.

17	26	1/6	1/2	1/12	1 1/2 $CaCO_3$ + 1/6 Ca. L. Phos.	4.9	++	1.4	Whole	
18	35	1/6	1/2	1/12	.....	6.6	+	1.9	Whole	
19	..	..	..	..	.....	3.5	+++	1.0	Whole	(Control)

TABLE IV.

20	26	1/6	1/2	1/12	1 1/2 $CaCO_3$ + 1/6 Ca. L. Phos.	4.8	++	1.4	Whole	
21	35	1/6	1/2	1/12	.....	3.0	++	1.5	Whole	
22	35	1/6	1/2	1/12	1/10 Na_2HPO_4	3.2	+	1.6	Whole	
23	..	..	..	..	.....	2.0	+++	1.0	Whole	(Control)

It will be observed that the addition of sodium phosphate as shown in Table I produced very satisfactory results both in delaying the time of curding and in changing the character of the curd. Bearing this fact in mind this agent was introduced in Experiment 22, as shown in Table IV. In this particular series of experiments the control showed a normal curding time of two minutes. In this case the addition of the modifying agent used in Experiment 1 delayed the curding time of this milk to 3 minutes, or 150%. The further addition of sodium phosphate, however, increased the curding time to 3.2 minutes, or 160%, showing the distinct gain by the addition of a small quantity of this agent.

CONCLUSIONS.

In all cases the toughness of the curd produced varies with the delay in curding which is caused by the modifying agent. Quick curding produces hard, tough clots while delayed curding forms a soft, fine mass. In a number of these experiments calcium carbonate and calcium lactophosphate were used, because practically all the milk modifiers on the market contain these ingredients. As indicated in our study of the theoretical considerations in a previous paragraph the fact was brought out that there were no adequate grounds for adding these constituents to agents intended to modify cow's milk and indeed their use is shown to be contra-indicated by these experiments.

A study of the results of these tables leads to the conclusion that the most satisfactory results in modification of cow's milk may be expected from the addition of the following ingredients: lactose, sodium chloride, sodium bicarbonate, potassium bicarbonate and sodium phosphate, omitting entirely the calcium salts which are commonly used in these modifying agents. We give below the proportions of these ingredients which from theoretical considerations and from laboratory experiments seemed best designed to meet the conditions ordinarily met with in modification of cow's milk for infant feeding.

FORMULA.

Lactose	35 grains
Sodium Chloride	1/6 grain
Sodium Bicarbonate	1/2 grain
Sodium Phosphate	1/10 grain
Potassium Bicarbonate	1/12 grain

This quantity of the different modifying agents should be added to four ounces

of cow's milk, which should be diluted, of course, in accordance with the requirements of the individual infant.

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RESEARCH LABORATORY,
THE WM. S. MERRELL COMPANY,
CINCINNATI.

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PERFUMES AND AROMATIC CHEMICALS.

BY ROBERT GLENK.*

(*Continued from p. 919, October issue.*)

TUBEROSE TYPE.

Tuberose is a member of the lily family with a characteristic fragrant odor. It is native to Brazil and has been introduced into all civilized countries. It is cultivated in southern France on a large scale for the manufacture of enfleurage products and absolutes which are very extensively employed in the perfume industry to develop the fine floral notes in synthetic compositions.

Its cultivation is attended with considerable risk and many times the harvest, which occurs in August and September, is unfavorable and high prices prevail for the natural products.

The synthetic equivalent of the tuberose odor is methyl benzoate or "Niobe oil" of commerce and which has also been detected in the natural flower product. The modifying odor is obtained by the use of methyl anthranilate, methyl salicylate, benzyl alcohol and benzyl acetate.

Jonquil, hyacinth and narcissus are usually considered of the tuberose type of odor although their fragrance is quite characteristic and individual. The flowers are largely cultivated for their natural products in France and harvested in April. The enfleurage and volatile solvent products are both made. Phenylacetic aldehyde is the odor base employed in making perfume reproductions or perfume oils.

VIOLET TYPE.

The violet has been esteemed as a favorite flower from time immemorial. Sweet violets are highly prized for their delightful fragrance everywhere and are largely cultivated in the south of France for the extraction of their fragrant constituents.

The plant flourishes in the South and the variety called Mexican violet bears a profusion of large blossoms which are very fragrant and are quite extensively grown for florists' use.

The perfume is extracted by enfleurage, maceration and by volatile solvents but the yield is so small that these products are unusually expensive, the price of violet absolute having been quoted at $750.00 per pound.

Violet perfume is perhaps the most popular of all the floral essences. This fact is accounted for by the use of the synthetic "Ionone" which was the first perfume synthetic put in the market. It is so powerful that only small quantities are needed to make a very satisfactory product and the price varies according to the flowery finish given to the particular perfume. Only the highest priced perfumes have even a trace of the natural violet product.

Ionone is a condensation product of citral from lemon grass oil and acetone, the preparation of which requires considerable skill and careful purification at the various stages to secure a fine quality of products. Numerous substitution and addition products of Ionone are now on the

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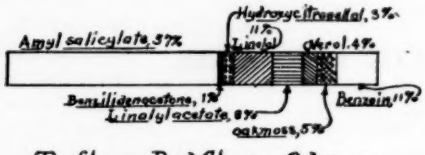
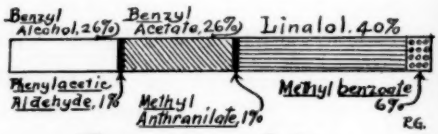
* Curator, Louisiana State Museum, New Orleans.

market with every variety and tone of violet odor so that the finished perfume perfectly represents all the different kinds of violets. The most recent and most important of the synthetic violet products are the violet ethers which impart freshness and petal effects to violet preparations, namely, the heptin, octyl and decyl carbonates of methyl, ethyl and amyl. These esters are very high in price, but they are so powerful that only trifling quantities are needed to give the flowery effect. Crude castor oil is the starting point for the synthesis of methyl heptin carbonate, which in its concentrated form is pungent and has a disagreeable odor.

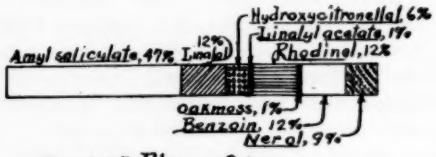
Orris root yields on extraction a concrete oil which has a fine violet odor and which is extensively employed in connection with the Ionone and other violet synthetics for the composition of high class violet essences. Cassie, mimosa, wallflower and mignonette flowers have fragrant odors which are suggestive of violet perfume and come under this classification. All of these flowers are extensively cultivated for the production of natural perfume products and are articles of commerce. They are used in connection with synthetic chemicals for the reproduction of the individual odors and in the composition of fancy bouquets; they are high in price. Ionone imparts the important odor note to all compositions of this class. The alcohol Farnesol has been identified as a constituent of cassie which gives distinction to the flower odor.



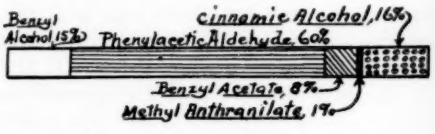
Trefle or Red Clover Odor.



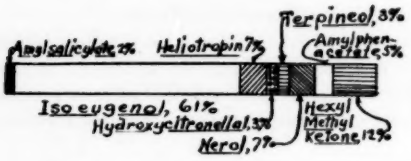
Tuberose Odor



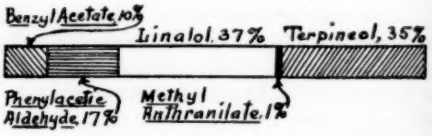
Orchid Flower Odor.



Hyacinth Odor.



Carnation Odor.



Narcissus Odor

The wallflower is one of the commonest and sweetest of the cultivated plants. The odor is faithfully reproduced by the use of geraniol, anisic aldehyde, benzyl alcohol, methyl anthranilate and paracresol methyl ether.

Reseda or mignonette is also one of the old-fashioned flowers of fragrant odor, whose artificial counterpart is indistinguishable from the natural product.

HELIOTROPE TYPE.

Several varieties of heliotropes are natives of the South but the fragrant variety is native to Peru and was introduced about 1750. The odor is inclined to be "almondy" and heavy and is extracted by enfleurage and by volatile solvents. The natural floral products are occasionally offered for sale but the reproduced odor is a close approximation of the natural fragrance. The basic odor of synthetic heliotrope is heliotropin, or piperonal, an aldehyde made from safrol on a very large scale. Flowery adjuvants are hydroxycitronellal, geraniol, methyl acetophenone and benzyl acetate.

Mellilotus or sweet clover, honeysuckle and 4 o'clocks or marvel of Peru are familiar flowers which have odors somewhat suggestive of heliotrope but quite distinctive. Coumarin is the basic odor of mellilotus and the new mown hay compositions, while the honeysuckle note is

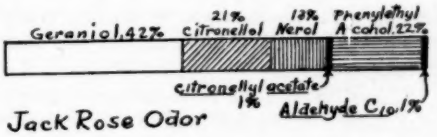
attained by the use of linalol, geraniol, hydroxy citronellal, vanillin, benzylacetate with tuberose essence.

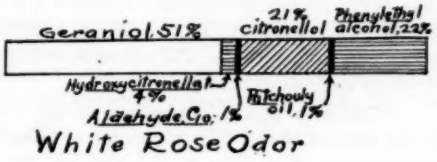
HAWTHORN OR MAYBLOSSOM TYPE.

Many of our commonest and most cherished flowers have anisic aldehyde as the basis of their sweet perfume. This aldehyde, commercially known as aubepine, is a constituent of the natural flower fragrance. To this class belong crabapple, cherry blossom, acacia, locust, linden, loquat, elder, confederate jessamine, nasturtium and oleander flowers. None of these flowers are used commercially for the extraction of natural perfume material at the present day, as the chemical constituents necessary for the perfect reproduction of any of these odors are readily obtainable and comparatively inexpensive.

RED CLOVER OR TREFLE TYPE.

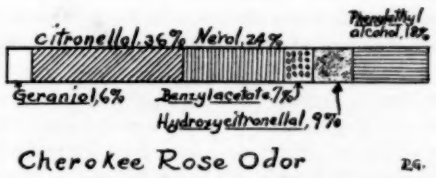
The odor exhaled by the common red crimson clover is of a delightful honey fragrance and has led to the composition of numerous popular perfumes under the names of trefle or orchid. Natural flower products of clover blossoms are not used for these compositions as the basic odor of the flower is accurately reproduced by amyl or iso-butyl salicylate which are sold under the commercial terms of orchidée and orchidone and which constitute 40 to 60% of such perfumes. Alone, these chemicals do not possess the floral fragrance requisite in a perfume and this note is secured by the use of natural and synthetic rose and jasmin products in greater or lesser amounts according to the price at which they are to be sold. With slight modifications of the formulas the experienced perfumer reproduces the odor bouquet of orchid, lotus, pansy, lupine and wisteria.





SWEET PEA.

The odor of the sweet pea, so largely cultivated in our gardens in spring time for its showy flowers, was one of the difficult odors to imitate by the old-time methods of using natural products. Organic chemistry, however, has solved the problem of accurately reproducing the sweet pea fragrance by the discovery of benzilidene acetone. This chemical product, suitably reinforced with phenylaceticaldehyde, terpineol and natural absolutes of rose and jasmin, imitates the flower odor to perfection.



LAVENDER TYPES.

The odor of lavender is due to linalyl acetate which in the French or Barreme oil amounts to as much as 44% while the English or Mitcham lavender is 4 to 7% Lavender is cultivated to a small extent in the United States and the dried flowers are sold as a perfume for the linen closet. The flowering heads with a portion of the leaves are distilled by the peasants in France usually under the supervision of the wholesale dealers in the oil so as to secure uniformity and quality of product. Lavender has long been a favorite perfume in the form of lavender water.

Among the plants producing essential oils which resemble lavender to a certain extent are rosemary, thyme, marjoram, origanum, sweet basil, mentha citrata and muscatel sage. As these plants are grown under naturally favorable conditions in Spain, France and Italy, and their distillation for essential oils carried on by peasants and with little outlay for equipment, there is no likelihood of diverting this industry to this country at the present time.

MENTHA CITRATA.

The U. S. Department of Agriculture has just issued a press bulletin relative to the work done on *Mentha citrata*, by G. A. Russell near Washington, in connection with research work dealing with essential oil-yielding plants. In *Mentha citrata*, a plant belonging to the mint family, the

U. S. Department of Agriculture believes it has introduced a new crop which, under suitable conditions, may bring a financial return per acre equal to that now obtained from other cultivated mints. The crop of the past year was grown on a sufficiently large acreage to give definite indications of its possibilities in Virginia. The yield of oil from the plant when distilled was at the rate of 30 pounds per acre. The oil is very fragrant and contains, on an average, 50 per cent. of linalyl acetate which is more than the French oil of lavender contains. Linalyl acetate is a very important aromatic chemical product and enters into the composition of synthetic oil of bergamot and many kinds of perfumes and flowers oils.

Horsemint is an American plant of the mint family growing wild in many sections of the United States. The oil contains 50% or more of thymol. The synthetic production of thymol from para cymene, a waste product from spruce pulp, will prove to be a cheaper method of obtaining it. In this connection should be mentioned the results of experimental plantings of peppermint near Raceland, Louisiana, on reclaimed land. Owing to the difficulty of keeping down the weeds, the peppermint crop became so contaminated with other odoriferous plants that the essential oil produced brought a very low price on the market and the enterprise failed.

Patchouly is a plant belonging to the mint family which yields an essential oil much used in scenting toilet powders and in oriental types of perfume. It is grown in Indo-China and the dried leaves are largely imported into this country where the oil is distilled under the most favorable conditions.

Vetivert is a tall perennial grass, growing in India and other tropical countries for the fragrant rootlets which are used in the preparation of an essential oil, highly esteemed in perfume compositions and as a fixative. By means of volatile solvents, a resinoid is obtained which takes the place of the oil to some extent. Vetivert is grown commercially to a small extent near Covington and sold as a scent for the linen closet. In California the roots are made into incense sticks and pastilles for fumigation. The odorous constituent of vetivert oil is vetiverol, an alcohol, the esters of which are also used in perfumery.

American Storax had become an article of commerce during the war but is difficult to obtain at the present time. The high cost of labor in collecting the balsam from the sweet gum trees makes competition difficult with the orientai product at one-third of the price. Storax is largely used in perfumery in the form of the volatile oil and colorless products obtained by means of petroleum ether and alcohol, which are valuable fixatives. It is used as a source of cinnamic alcohol and cinnamic esters, which also enter into the manufacture of perfumes of the hyacinth type.

Deer Tongue or Vanilla plant, *Liatris odoratissima*, is native to the southern states. Its leaves develop an aroma when dry, suggestive of vanilla or tonka bean; it is sometimes used for scenting tobacco. Sweet Vernal Grass is an indigenous plant which develops a faint fragrance of coumarin on drying. It is used for making ornamental scented baskets and gives the peculiar fragrance to freshly cut hay fields and to which the new mown hay perfume owes its character. Mellilotus, or sweet clover, likewise develops the tonka bean aroma on drying. The coumarin content in these plants is not large enough to warrant its extraction from the natural material as its synthesis from salicylic aldehyde is a very much cheaper method of making it.

The Illicium or Anise tree is another of our indigenous plants the virtues of which are unrecognized or neglected. The star anise oil of commerce is made from the fruits obtained in oriental countries, mostly China; anethol and anisic aldehyde are prepared from it and used in perfume manufacture. The common fennel is largely grown by local market gardeners as a celery substitute; if allowed to mature, it will produce heads of fragrant fruits or fennel seeds. Fennel oil resembles anise oil both in flavor and composition and could be used as a source of anethol.

Oak moss or Mousse de Chine is a lichen of the Parmelia family abundantly growing on the live and water oaks of the southern states. It has a characteristic odor which is extracted by volatile solvents and possesses remarkable fixative properties. It is in great demand for the composition of oriental bouquets and new mown hay, orchid and trefle perfumes. The resinols and absolutes of oak moss range in price from 5 to 25 dollars a pound. It may be interesting to note that this lichen formed part of the funeral equipment of the early kings, and was an article of commerce 5000 years ago in Egypt, being used as an ingredient in bread making. In colonial days in America, pulverized oak moss was used as a hair powder which imparted both tint and odor to the coiffure of the ladies and wigs of the gentlemen.

Sassafras root bark yields an essential oil containing, as chief constituent, safrol from which

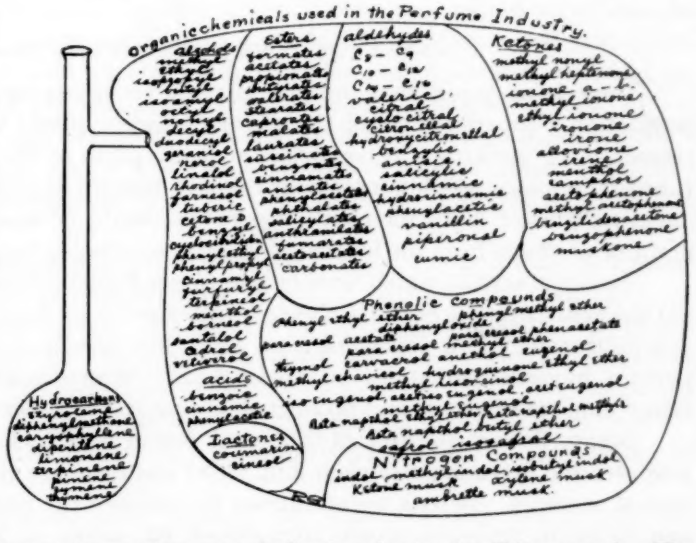
heliotropin is made. It is also largely used as a scent for cheap soaps. Sandal wood oil plays an important part in the manufacture of perfumes especially those of the oriental type. It has marked fixative value and enters into violet, mignonette and cassie bouquets. The wood is also used in incense pastilles. Lemon grass is native to India. Experimental platings were made at Orlando, Florida, by the U. S. Bureau of Plant Industry and oil distilled from the crops. The value of the oil depends upon the high citral content, 65–88%, which is used in the synthesis of violet ketones. The yield of oil is from 0.5 to 2%.

Lemon oil produced as a by-product of the citrus industry of California has, in recent years, become an article of commerce. It is manufactured by an entirely different process from that followed in Europe. The lemons are conveyed in a continuous stream into a convoluted phosphor bronze machine which massages the fruit and finally crushes it, producing a flow of juice which washes down the spray of oil and carries it through a strainer and into a centrifugal separator. This separator gives a perfectly clear, brilliant and highly colored oil, with none of the fragrance impaired, within 15 minutes from the time the fruit enters. Sweet orange oil is made by the same process and the demand is rapidly increasing as the high quality of the product becomes better known.

Croton glandulosum is one of our common weeds belonging to the spurge family of which plants yielding croton oil and cascarilla bark are also members. This plant is fragrantly aromatic and yields on distillation with steam a small per cent. of essential oil with a lemon grass odor. It might possibly be used as a source of citral. Pine needles, especially the short leaved varieties, yield essential oils composed largely of pinene with a small percentage of bornyl acetate which gives the peculiar pine aroma or pine woods smell. Commercial pine needles oil is obtained mostly from the Siberian pine which has a high percentage of bornyl acetate and is used as spray perfume for theatres and other public places. Tyropine bouquet is used as a scent for bath salts. Cypress tree branches also yield a fragrant oil on distillation containing a small amount of the peculiar "cypress camphor" which crystallizes from alcoholic solution somewhat like cedar camphor. The oil has been recommended for whooping cough and is an article of commerce. It is also coming into use as a fixative on account of its ambra qualities.

ANIMAL PRODUCTS.

There are a number of animal products used in perfumery which are practically indispensable for their fixative qualities. These products are ambergris, musk, civet and castoreum and have been used by perfumers since antiquity. In the raw state, these substances have an unpleasant and even nauseating smell and it is only in extreme dilution that their use is appreciated. Practically every finished perfume on the market contains one or more of these products to give lasting quality to the odor and frequently an excess is used. Ambergris is a pathologic product of the sperm whale. Musk is obtained from the musk deer of Thibet, civet from the domesticated civet cat of Abyssinia, and castoreum from the common beaver.



It is not generally known that the alligator has two musk glands which contain secretions very similar in odor to the Chinese musk. The quantity is so small, however, that no attention is given to these glands in a commercial way. Ten cc. of secretion were obtained from a 12-foot alligator. On account of the scarcity and

consequent high price of both musk and ambergris, synthetic musks and ambers have been developed, which, while they have no chemical relationship with the odorous principles of either product, have a very marked similarity in smell and fixative value. Three varieties of synthetic musk are on the market, all white crystalline highly nitrated, tertiary butyl toluenes or xylenes called ketone, xylene and ambrette musk. These musks are not very soluble in alcohol and are nearly always brought into solution by the use of benzyl benzoate, or diethyl phthalate, and constitute the musk oil of commerce.

Ambrinette is a useful ambergris substitute and scatol or methyl indol, and iso-butyl indol are very satisfactory substitutes for civet, which have been developed by American chemists. They are crystalline compounds of a vile odor.

FIXATION OR STABILIZING OF PERFUMES.

In living flowers, the perfume is secreted continuously and given off in infinitesimal quantity and in highest dilution. When this perfume is isolated the flower odor is obtained in a much more concentrated condition and, naturally, it is not nearly as flowery or sweet. Besides many of the constituents, being quite volatile, evaporate more rapidly than others, the various shades of odors become perceptible and the effect is not as pleasing as when smelling a flower. To obviate this fractional evaporation and to obtain a continuously uniform odor note and one which is much more lasting, it is necessary to use fixatives. Fixatives sweeten and blend the odor constituents and retard evaporation so that the fragrance is given off in small quantity and uniform in odor somewhat after nature's method.

As there is no universal fixative known, the greatest success is only to be obtained by the structure of the perfume composition itself and that is done by blending ingredients of similar odor and intermediate volatility so that one fixes the other. Here is where the difficulty is encountered in perfume blending as the public demands that perfume shall be lasting and at the same time delicate and flowery, conditions which are very hard to combine. A thorough knowledge of the chemical and physical properties of perfume constituents is absolutely essential to be successful.

DOMESTIC PERFUME FLOWER CULTIVATION.

There is no doubt that soil and climatic requirements are favorable for the production of practically all of the perfume-yielding plants that are now grown in temperate or semi-tropical countries, in many parts of the United States. The tuberose industry which is now flourishing in North Carolina and Texas and produces millions of bulbs for planting purposes, could be made to yield the natural perfume products from the fragrant flowers as a valuable by-product.

Acacia farnesiana which furnishes the Cassie floral products, is at home throughout the South from Florida to California and bears its fragrant flowers in abundance. Our indigenous yellow Jessamine from which Mr. Moulie, of Jacksonville, has prepared a fragrant marketable oil, could readily be propagated and made to yield heavy crops of blossoms and products if the matter of labor could be adjusted.

Orange flowers are utilized to a small extent near Jacksonville for perfumery purposes and lavender, rose geranium, violet and roses are grown in a small way in several sections. It took two centuries to establish the rose industry in Bulgaria and in recent years successful competition has arisen in France and Germany. It may be reasoned that further migration of this industry is to be expected and we may eventually find the center of production in our own country. Already an in-

terest has been aroused in the direction of volatile oil production and the trade may be relied upon to take an active part in any rational attempts at developing such an industry with the usual innovation of new methods and economies so characteristic of American ingenuity and enterprise.

During the past summer, the American manufacturers of toilet articles, as an association, pledged a fund of $10,000 to be placed at the disposal of Prof. G. A. Russell, biologist, Federal Department of Agriculture, to promote research and coöperation in the cultivation of floral raw materials with the ultimate expectation of creating an important domestic industry. A course in perfume chemistry is also now offered by Columbia University, beginning in 1925. A bibliography or compilation of articles in pamphlet literature or trade journals concerning the newer products of the perfume industry is also urgently needed as none of the modern books on organic chemistry outside of "Parry's Monographs on Essential Oils and Synthetic Perfumes" and Poucher's work on "Perfumes and Cosmetics" afford information on the great numbers of new chemicals on the market. Perhaps this deficiency will soon be remedied by the publication giving chemical and physical constants of essential oils, and odorous materials in general in the forthcoming book which is being prepared by the U. S. Research Council, Washington, D. C., to be called "International Critical Tables of Numerical Data of Chemistry and Technology."

APRIL 25, 1924.

THE DRUG STORE AS AN ADVERTISING POTENTIALITY.*

THE PHARMACIST'S COÖPERATION OR LACK OF IT CONTROLS THE DESTINY OF EVERY ADVERTISING CAMPAIGN IN HIS LINE.

BY F. H. PECK.

Much can be said and truthfully both in favor of and against advertising as applied to pharmacy. However, whatever our belief, we must admit that advertising has become so potent a factor in our daily life that the business man, in any line, must understand it more intimately than in the past, if he is to succeed.

A few years ago, advertising seemed remote from professional medicine and pharmacy. It was the tool of the charlatan, the vendor of proprietaries and of the large commercial chain stores perhaps, but it was of no interest to the professional man.

Then came the World War with the upsetting of many traditions and precedents. We saw advertising successfully employed to reach the minds and the heartstrings of this great people. We saw our Government call into its service the great advertising minds of America, and launch the most gigantic advertising campaign in history. We witnessed the conflict between the advertising campaigns of two great groups of nations for the moral support of the world; one to succeed—the other to ignominiously fail through a failure to understand the psychology of the masses.

Since that struggle we have watched our great banking institutions, our transportation companies, our life insurance organizations, and even our churches

* Section on Commercial Interests, A. Ph. A., Buffalo meeting, 1924.

join the great company of National Advertisers with their institutional and human interest appeals to the minds of the public. It was not entirely a surprise, with such precedents, to see that our old co-workers, the medical profession, were being slowly forced into advertising to preserve their place as the guardians of the public health, and to uphold the noble traditions of professional medicine against the publicity onslaughts of the faddists and the cultists.

The medical profession has come to realize that removed from its evil companions of the past, advertising is but the science of suggestion that, based as it is on mass psychology, is capable of playing an important rôle in the education of the public.

In our modern merchandising, advertising in some form is essential. Its function is to create that desire of possession on which every sale depends. But modern merchandising differs from the barter and sale of the past in that the desire for possession is now created in the mind far removed from the point of sale.

Selling is a compelling art, but between the creation of the desire and the actual consummation of the sale lies that broad gap of time and place that enables the inhibiting reactions, reason and judgment and procrastination, to outweigh the first impulse.

Think of the countless thousands of people in this country who are inspired by a desire of possession created through reading the advertisements appearing in our magazines and newspapers! Think of the countless thousands who daily pass the drug stores of this country who have had a desire of possession created in their minds and who need but a reminder at the point of sale to crystallize that desire into action! This is sleeping business that needs but the awakening touch of the merchant to develop into profitable business.

Such a large proportion of the business of the modern pharmacy is with advertised products that this sleeping business becomes too important a subject to the pharmacist to be disregarded. He of all others should endeavor to bridge the gap between advertising and selling and to crystallize the desire that is being created for advertised goods into sales. In an endeavor to bring advertising to the point of sale, advertisers have created reminder copy, bill boards, street car cards—but as Dobbs has so truthfully said, the only one hundred per cent. effective advertising medium is that which advertises at the point of sale.

The value of an advertising medium is based on its circulation: A *Saturday Evening Post* page costs the advertiser from $6000 to $7000. It is worth it because of the millions of potential readers. That is circulation.

A poster board in New York City costs the advertiser from $2000 to $3000. It is worth it because of the thousands of people who daily pass and see that poster. That is its circulation.

An electric sign opposite the Hotel Astor is said to have cost Wrigley $100,000 a year, because of the millions who daily, or nightly, pass along Broadway and are forced to see that sign.

If these did not more than repay the advertisers, they would not be used as continuously as they are used. Their tremendous circulation makes them successful advertising mediums.

But hasn't the drug store window a "circulation" just as definite? And, being directly at the point of sale, hasn't it a value to its owner more tangible than any of them?

Thousands of people pass within a few feet of the drug windows every day. According to the survey of A. T. Fischer for the Association of National Advertisers:

In small towns (2500–25,000) 372 persons per hour, 4464 per day pass the average store window.

In medium sized towns (50,000 to 250,000) 1791 persons per hour, 21,492 per day pass.

In cities (250,000 and up) the average circulation is: Uptown 556 per hour—6672 per day; downtown 3505 per hour—42,060 per day.

Fischer further on shows the value of counter displays by a series of drug store tests, as follows:

The sales of a well-advertised tooth paste were carefully tabulated in 20 stores for a period of three weeks to determine the normal demand, without display help—165 tubes were sold. During the succeeding 3 weeks, the same paste was placed on the show case in display cartons in the same 20 stores—412 tubes were sold, being an increase of 257 tubes, or 165%.

Two similar tests with slow selling proprietary medicines showed increases of 142 and 137%.

In a quite recent intensive sales campaign through the metropolitan drug stores of New York, ten window displays were installed in various sections of the city to test their effect on sales. The increased sales of general line products not displayed in the window, but affected by the display of the line, varied from 25 to 150%, with an average of 37%.

The increased sales of products actually displayed in the windows varied from 50 to 150%, with an average of almost 100%.

But the most striking example of the power of the window came through the testing of a novelty display in a Broadway store in the financial district of New York, a few weeks ago. This display required the placing of a diagonal 8-inch strip across the window which had peep-holes at regular intervals. Unfortunately the total number of passersby was not checked, but in the course of one hour, between 10 and 11 A.M., 1044 persons actually endeavored to see this window. Estimating the total number from this would give an average of about 18,000 during a single day. The increased sales of tooth paste resulting from this display amounted to 900%.

In all, 106,000,000 people see the drug store windows of the country on an average of every 24 hours, 365 days in the year.

Instead of a magazine space 9 × 12 inches, the average dimensions of the drug store window are 7 × 7 ft., 20 inches deep. You have light, color, the actual goods to supplement the illustrations—all the elements so sought after by advertising men. You have every means at your disposal to dramatize your appeal and make that appeal effective. You have locations on the best corners, the busiest thoroughfares, the best-lighted streets. In the drug store windows of the United States you have 8400 square miles of the best advertising space in the world—taken together, a Peacock Alley that would extend from Buffalo to New York City.

A recent investigation of 100 average sales of underwear made by the Robert Reis organization showed that 42 of the 100 purchased through window display; 21 purchased through the selling effort of clerks; 20 were inspired to buy through magazine and newspaper advertising; 17 purchased as a result of recommendations of friends.

Did it ever occur to you that the Woolworth Building is a monument to the lure of display? You enter a Ten Cent Store to buy a tack hammer. You see and purchase because they are in plain sight before you, a tack claw, a paper of tacks—and before you leave that store, you find that instead of one article which you intended to purchase, you have bought a half-dozen. It is a recognized fact that the Ten Cent Stores of to-day could not exist if the purchases of each customer were limited to one ten cent sale. Their success is due to the lure of display.

The United Cigar Stores are another classic example. For several years after the organization of their company, the plan was a loss. Not until the permanent marker was adopted—the bright red band that makes them so distinctive—were they a success. But for the vision that saw the importance of that characteristic, the United Cigars Corporation would have failed.

In the window you have an advertising medium capable of focusing every dollar, spent by advertisers, on the dealer's store. And yet in spite of this fact, by far the greater part of the space is being wasted through lack of appreciation of its value and ignorance of the principles of advertising and of display.

The druggist forgets that the rent he pays for his establishment is measured by his store front—that the window in which he displays his merchandise counts more in fixing his rental than the depth of his store does. He fails to realize that failure to use his window effectively is a wastage of two-thirds of his rental. According to a statement made by an officer of the National Lithographers' Association, there are produced annually five times as many displays as are needed to supply every window in the country—that but one out of every five displays produced ever reaches the window. Here is almost unbelievable waste, and waste in advertising means inefficiency in merchandising and excessive overhead added to manufacturing costs that must eventually be paid by the consumer.

But let us forget the National Advertiser and view the Drug Store Window from the broader angle of profesional pharmacy. The pharmacist's prestige in the community is in proportion to the public's recognition of his scientific and professional training. The pharmacist and the physician both have great messages to tell the public.

In these days of cults, the doctor's and druggist's stories of their accomplishments in the interest of the public health is an all-important one both to the public and themselves. And in the history of medicine and pharmacy there is a wealth of material—the every-day practice of these professions has a storehouse of human interest stories that the public should know. The drug store window, notwithstanding its merchandising value, is too great an asset to devote solely to the cash register and the national advertiser. A large portion of the window displays should be of the kind that will educate the public to the professional side of pharmacy. For, after all, the window is the one medium that can successfully portray the life of a business.

The motion picture has taught the American people to demand a dramatization of its education and of its merchandise. The window offers us a chance to dramatize our message to the public, and that is just what our calling needs.

Let us realize that we have in the drug store windows of the country one of the most powerful advertising mediums in the world—one capable of wielding a tremendous influence for good. But, first, there is need for a study of the potentialities

of the drug store display and an organized effort to bring about efficiency in such display, not for the national advertiser, but for the druggist.

The national advertiser has his part to play—he by the nature of things will always be a contributor to the dealer's display but the advertiser should be made to understand that he is in the dealer's window or on his counter as a guest occupying the most valuable space in the merchant's possession, and should contribute—not in rental—not in free goods—but in advertising and merchandising service to that store commensurate with his gains.

With the rapid strides being made in advertising methods, it is but a question of time until organization will develop some plan for a nationalized dealer's service, but when that time comes, the pharmacist should realize that he, as the chief contributor, is also entitled to chief consideration. Dealer's display should be what the name implies—display that will serve the pharmacy and the store first; the national advertiser second.

Every pharmacist should realize that he stands like an engineer controlling the main steam valve between a boiler room and the engine it supplies with power—his coöperation or lack of it controls the destiny of every advertising campaign.

THE COMPLETE SERVICE JOBBER—A REPLY TO MR. WILLIAMSON.

BY SAUNDERS NORVELL.*

I have read Mr. Williamson's well-prepared address on "The Purpose of Coöperative Wholesale Drug Companies and What They Are Accomplishing,"[1] with special interest and I wish to say at the outset that I am not opposed to the distribution of drugs through coöperative wholesale drug houses. I can see no good reason why retail druggists, if they think that it will be to their advantage to establish coöperative wholesale houses, also to buy stock in and finance such businesses, should not do so. I make this statement simply because I do not wish to be misunderstood as being opposed *to the principle* of coöperative wholesaling or coöperative effort of any kind.

Mr. Williamson paints a very black picture of the condition of the retail pharmacist when he turned to coöperative effort as a panacea for his ills. I might be led to inquire here, if this condition is true, *whether the fault was entirely with the wholesale method of distribution.* Was the trouble caused entirely by the fact that the retail merchant was paying too much for his goods? I might inquire whether, on the other hand, it might not be asked if a large part of the retailers' troubles was not the fault of the retailer himself. By this I do not mean to attack the individual retail merchant but to make a calm and judicial inquiry into general retailing conditions.

I am under the impression that the retail drug business is overdone. There are too many retail drug stores. I would like to see the figures as to the increase in retail drug stores in the past five years in proportion to the population of the country. I have not these figures at hand but I should judge, just from my personal obser-

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* Chairman of the Board, McKesson & Robbins, Inc., New York City.

[1] October JOUR. A. PH. A., pp. 919–922.

vation, that the business is over-crowded and that one of the *main causes of trouble with the retail druggist is that there are too many of them.* This over-crowding has no doubt led to very keen competition for business and this keen competition has led to the cutting of prices. This cutting of prices has naturally led the retail druggist to seek the very lowest price source of supply for his goods. If the over-crowded condition of the retail drug trade is one of the main factors in the cutting of prices, naturally this condition could not be helped either by manufacturers or wholesalers.

Another condition that may have brought about the distressing situation among retail druggists as outlined by Mr. Williamson was, not the inability of retail druggists to buy goods at the lowest price, but their lack of good judgment in pricing and selling their goods. The retail druggist is called upon to give unusual service to the public—I mean—comparing his service with that of shops in other lines of business. When other stores close at 6 o'clock, the retail druggist keeps open until 12 o'clock at night. He has a clerk sleeping in the shop to answer the night bell. He must make frequent, hurried special deliveries.

I have always believed that service rendered should be paid for. I do not believe the retail druggist has been adequately paid nor has he asked sufficient remuneration to compensate him for the many unusual services he renders. Allow me to illustrate by saying that if I send a prescription to a retail druggist to be filled at 4 o'clock in the afternoon, he charges me a certain price. Now if at 12 o'clock at night I ring his clerk out of his bed behind the prescription counter and he fills the prescription, I am quite sure I would be charged exactly the same price. It seems to me that the value of the service at 12 o'clock at night is very much greater than the value of that service at 4 o'clock in the afternoon, and should be paid for accordingly.

One midnight here in New York I dropped into a certain retail drug store and purchased a can of a well-known tooth powder. The price charged me, at midnight, was 19c. Happening to know the cost of this tooth powder, I asked the clerk why he sold it at this cut price at 12 o'clock midnight. This salesman replied that 19c was the price at which this tooth powder was advertised by a certain department store and therefore they were "compelled" to meet the price. "Yes," I replied,"but that department store closes at 6 o'clock in the evening. Do you continue to compete with the department store's cut prices with midnight service?" The clerk gazed at me as if I were a crank, yawned and remarked,"Well, anyhow, that's the price. What are you kicking about?"

I could give instance after instance in my own personal experience where I have found retail drug stores giving unusual service without an adequate charge. Just this week I telephoned The Wilson Pharmacy in Larchmont, New York, where I live, to kindly send a certain prescription. Within an hour afterward, a large delivery automobile drove up to my home. The small prescription was delivered and I noticed the price was exactly the same as when I called for the prescription in person at the drug store. The cost of this automobile delivery service, I believe, was more than the entire amount charged me for the prescription.

In a nutshell, as a merchant of many years' experience, *I am convinced that the retail druggist in the majority of cases has never awakened to the fact that he is selling Service instead of merchandise.* The trouble is that all of the figuring is done on his

percentage of profit on the cost of goods when, for the service he renders to the community, the cost of his goods should be a secondary consideration. Therefore, it is my contention that the retail drug merchant by the nature of his business should continue to render the splendid service he is giving to his community. The quality of this service should not be cut down but the retail merchant should have the courage to charge his customers what this service is worth and defend his charges. If I eat unwisely and along in the middle of the night am taken with cramps, and if I require certain medicines very quickly in the small hours of the morning, the fault is not that of the retail druggist. The fault is mine. It is my indiscretion *and I should be compelled to pay for it.*

No, I do not believe that the deplorable condition in which the retail druggist found himself before and since the formation of coöperative stores was entirely the result of the retail druggist's paying high prices to his wholesaler. I think if the retail druggist will study the problem from all of its angles instead of from only one, he will find that one of the causes, and a very important one, was the lack of good judgment in selling—by that I mean—in not getting a profit where the character of his service entitled him to that profit *and where the price could be obtained if it were simply charged.*

Another thought that both the retail and the wholesale drug merchant should consider is the fact that the unit of his sales is exceedingly small as compared with other lines. The drug business is just full of 5c, 10c and 25c items. The making and recording of these small sales is very expensive. Now if many of these 25c or even 50c sales are on nationally advertised items, while they give the retailer a quick turn over, as a matter of fact, they do not usually pay a percentage of profit as much as the retailer's cost of doing business. If the retail merchant would analyze the sales of these items, he would find he has a very quick turn over but he is losing money on every sale and the more frequently he turns his stock, the more money he loses.

For years I have contended, both to wholesalers and retailers, that there was never as much money lost in paying too much for goods as was lost in buying the wrong kind of goods—buying too many goods or buying the unsalable sizes of goods. I have preached for a generation that the character of the inventory was of more importance than the price paid for the inventory. By this I do not mean to say that all merchants should not try to buy their goods just as cheaply as possible but what I do mean is that it is more important for a buyer to carefully consider first what he is buying—the salability of the item—than its price. The experience and observation of forty years in business have convinced me that in this I am correct. I have lost more money in my own business by buyers purchasing the wrong kind or the wrong quantity of goods than I have lost by these buyers not purchasing their lines cheaply enough.

Let me illustrate the idea in another way: Suppose there were ten retail drug stores for sale and these stocks inventoried in total about $5000 each. I do not believe between the closest and the most careless buyer that there would be a variation in the value of these stocks of more than 5%, or $250. On the other hand, I am sure, by reason of careless buying in kind and quantity, that we would find a variation in the value of these stocks of from 25% to 50%. If a committee should start to investigate the troubles of the individual retail druggist to-day, I am quite

sure they would find that the real cause of the greatest amount of trouble was poor buying in the kind of goods and in the quantity of goods purchased.

Allow me to say here that I personally have never believed in the price-for-quantity system of selling goods. I do not believe that the retail dealer should be tempted to buy more than he actually needs by the bait of a lower price for a quantity order. Personally, I do not believe in deals or free goods. Speaking for myself only, I consider all such things an abomination. It is simply a method of forcing sales and I do not believe that forced sales are healthy or that success that comes from this method is permanent. I believe that goods should be priced at the lowest figure at which the wholesaler or manufacturer can afford to sell them, that they should be sold at this price and that this price should be maintained to all retail merchants without exception. If one retail merchant happens to sell a large quantity, he derives his reward from the larger profit he earns by reason of his larger sales.

Of course I know the arguments of salesmen in favor of these quantity deals. They will say that if you do not fill up a retail merchant, he will run short and buy goods of the same kind from your competitor. Salesmen claim that as a general rule they cannot count on the loyalty of the retail merchant to their line and for that reason it is to their interest to sell him all the goods they can by the bait of a quantity price or a free goods deal.

Let me say that I never knew anything of such a selling system until I came into the drug business and after ten years, I am not yet convinced that the system is right. In fact, I believe in it less now than I did in the beginning. One result of this system is in the fact that the retail drug merchant has now reached the stage in his evolution where he does not feel like buying anything unless there is some kind of chromo, prize, rebate or something-for-nothing to go with the purchase. This is only natural and I feel that the fault is that of the manufacturers and not of the retail merchants.

Now Mr. Williamson tells us about the great success of these coöperative stores. I understand from hear-say that the Philadelphia coöperative store has been very successful. I do not know any of the gentlemen connected with this business but from what I have heard, I have the impression that this coöperative house must be very well and skilfully managed. On the other hand, I have heard of other coöperative stores that have not fared so well. I have even heard of retail merchants who have bought stock in these stores and who have lost all their money. I have even heard in the case of one coöperative institution where the head men in this institution have done very well indeed while the retail druggists who were stockholders could not to-day sell their stock for one-fourth of what they paid for it. What do I conclude from this? Not that there is anything wrong in principle about coöperative merchandising but that *this class of business is subject to the same law as all other lines of business*. If a business is well and skilfully managed—whether it is a coöperative business, a manufacturing concern or an old line, complete service jobbing business—it prospers; while, if it is mis-managed it gets into trouble.

Here we come to the human equation in business. If the retail merchants of the country were sure that every coöperative wholesale distributing house they should form would be managed with integrity, energy and good judgment, then, of course, it might not be dangerous for them to invest their money in such concerns. Un-

fortunately, however, they have no such guarantee. The mere fact that such a house in one city is a success is no reason why such a house in another city, running upon the same principles, will be the same success because into the problem comes that ever-present human question of integrity and good management. In the case of a regular wholesale drug house, if the management is poor and if there are losses, the losses are borne by the owners of the business. If the concern fails, it causes no loss to their customers. The regular wholesale drug houses take their own chances on the success or failure of their business. Their retail customers can buy from them if their service and prices are right. If they fail or if they are unsuccessful, their retail customers do not suffer.

There is another angle to this question. In every line of business, certain parts of that business are profitable while other parts are unprofitable. It is often wise in a wholesale business to carry certain lines of goods or the parts of one line of goods simply as a matter of service in order to help along the entire business. For instance, slow sellers should bear a very much higher profit than quick movers in order to cover interest, overhead and lack of turn over. The fact remains, however, that this is not the case. Slow sellers in almost all wholesale houses are priced on just about the same percentage of profit as other goods in their class that move more rapidly. On the other hand, every retail druggist knows that when he requires any of these slow sellers, he must have them and he wants them quickly along with his other goods. The average retail merchant never stops to think how long his complete service wholesale house has had to carry these goods simply *to be ready* to serve him when the occasional demand arose. This, I repeat, is true of all lines of business. All of us know that the medium sizes in all lines as a rule are the best sellers. The very small sizes and the very large sizes are slow stock. I am sure I am not far wrong when I state that *one-third of the entire capital invested in merchandise* in all lines, consisting of these small and these large sizes, is slow and comparatively dead stock.

Of course if any concern can go into business and carry only the quick sellers, leaving out all these slow-paying, sleeping boarders, they can do business theoretically and actually on a smaller margin of profit but in that case *who is to supply these necessary slow movers?* Who is to supply these special goods that are seldom called for? It is hardly fair for the retail druggist to send his orders *in full case lots* to his coöperative house for the *best sellers* and at the same time make up his orders *in fractions of a dozen* for the complete service jobber in order to secure these slow movers. This way of doing business may be fair but to me it hardly seems so and, what is more, I do not believe that doing business in this way can continue. The complete service wholesale house naturally cannot be expected to compete with the short service coöperative house on such a basis.

Then there is the problem of salesmen. Are salesmen necessary? Are the drug salesmen of the country worth their salt? If new goods are to be introduced—if samples are to be shown—who is to do this missionary work if not the salesmen and who is to pay for this work but the complete service jobber? As I understand it, these coöperative houses do not have traveling salesmen. They allow the regular wholesale drug house to introduce new goods, specialties and novelties through their salesmen. Then when the business has been worked up and established, they add such goods to their stocks. I wonder if this is fair.

What is the history of the majority of the retail drug merchants? They are first clerks in a drug store. They obtain a small amount of capital, call on the complete service jobber for a complete assortment of drugs, chemicals and sundries (in fractions of a dozen), have the traveling salesmen of the jobber help them select the goods they need, pay part cash on their new stock order and then string along the balance for many months. In a word, the complete service jobber with his salesmen not only furnishes the complete assortment and help the new merchant with their knowledge of the assortment he should purchase, but in the majority of new stocks actually finance the business. So these new merchants, as a matter of fact, with the assistance of the complete service jobber, start into business *and then make their living out of the business while they are learning how to conduct a retail drug store.* If this merchant becomes successful, is it exactly fair for him later, when he is out of the woods financially, to join a coöperative association and give them the cream of his case lot business while he still continues to draw on the jobber in fractions of a dozen for odds and ends in the drug line?

Then I note from Mr. Williamson's article that the retail merchant is being *trained* by these coöperative stores to pay his bills promptly—in fact—to take his discounts. Now every regular wholesale druggist knows from sad experience that a very large part of his trade do not take their discounts, that another percentage of his customers just pay when the bill is due without any discount and that still another percentage do not even pay at due time but force the wholesale house to go to a good deal of trouble, by collectors' calls, drafts, threats and dunning letters to collect these accounts. Of course if a wholesale house could do business only with cash payers, this would save a great deal of time and money. It would be a delightful way to do business. I wonder if it is exactly fair for the retail druggist to stand off his regular wholesale house while he is paying cash to his coöperative institution.

There is another, and a last, consideration that I will touch upon in this article. It is the human factor. Once I started a wholesale business with practically all young men. There was not a man on our Board of Directors over forty years of age. In our business from top to bottom it happened that they were all young men. In this business we had no national experts and therefore no large salaries were paid to anybody. All of us, practically without exception, were out of the ranks of the workers. To be frank, we did not know just what a good salary was because none of us had ever had one! We increased our sales and we did business at a surprisingly small cost.

However, what happened to this business in the course of time? Our best men soon realized their value. They asked for and received higher salaries. The officers of the company felt they were entitled to the same comforts and even luxuries that the heads of other houses were enjoying. The pressure for high salaries from all directions was steady and with advancing age, the efficiency of many of our men declined. This natural condition was reflected in the increased cost of doing the business.

Now, following the theories of my friend, Mr. Williamson, in order to keep the cost of doing business down, when employees grow gray in the service, there should be some means of getting rid of them. When the dominant idea in a business is simply *to hold down costs*, the manager of that business must be very careful not to be caught with old and decrepit employees, no matter how many years

they may have served nor how faithful they may have been. No business with the one idea of the low cost can be conducted in a humane manner. Employees must understand that when they are not capable by age or infirmity of keeping up a grinding pace, they will be thrown out. Such businesses take no part in civic development. They make no charitable donations. They make no contributions to associations maintained for the welfare of the trade. Their names are never seen on the list of those who make donations to scientific institutions. In the nature of the case, *the one object of such concerns is to distribute goods cheaply and this is the beginning and end of their functions.*

In almost every old established, complete service wholesale house we will find a good many of these old men who have been with the concern many years. We must admit they are frequently a very difficult problem to handle. Now, of course, I may be wrong but it seems to me, even at the risk of a higher cost of distributing goods, that these old employees should be taken care of and in the end rewarded with a pension for their many years of service. This I know is a problem that most of the coöperative stores are too young to have faced but this problem will also come to them. *What do they propose to do about the human element in their businesses?*

Are the complete service wholesale drug houses of this country charging too high a profit for their services? I think not. The Harvard Bureau of Research studied the figures of 100 of the leading wholesale drug houses in the United States for the year 1922. What was their report? Of these 100 houses, selling $160,000,000 worth of drugs, 32 lost money on the year's operations. The net profit on the year's operation of the entire 100 was $^{9}/_{10}$ of 1%. What is the answer? Does it cost these wholesale houses too much to do business? My judgment of what I have seen of the wholesale drug trade of this country in the past ten years is that the true answer is *they are giving a service entirely out of proportion to the compensation they are enjoying.* They are in exactly the same boat with the retail drug trade of the country. Many wholesale houses give their city trade daily deliveries. These deliveries frequently go by motor many miles out into the suburbs. What does this mean? In order to give such service, it is necessary to have a maximum number of packers, checkers, stock clerks and billing clerks. The peak load of business, when all of this force is busy, is only four hours in the working day. In other words, in order to give such service, it is necessary to employ almost twice as many men as would be required if only a reasonable delivery service was expected. I estimate that in the average wholesale drug house giving this daily service, their stock men, checkers and packers work at their maximum speed only four hours in the day. Service of this character is not equalled in other lines of business and it is my observation that *the profits of the wholesale drug trade do not justify the cost of such service.*

Of course we all know that the very slim profits made on proprietary medicines is the great curse of the drug business, both for wholesalers and retailers. These goods are sold at one general discount, which is a mistake. The sale of patent medicines is about 60% of the volume of the business of the average wholesale house or retail merchant. Both classes of merchants fool themselves about the profits they are making on patent medicines. They have an idea they are saved by quick turn over, not realizing that quick turn over at a loss is a very dangerous

leak in a business. We, ourselves, in our business very carefully figured the cost of handling patent medicines over a period of several years. We found that it was impossible for us to furnish the complete daily service we were giving our retail customers without meeting with a heavy annual loss on patent medicines.

For this reason, after giving the matter very careful consideration, we discontinued the sale of patent medicines. It is argued, on the other hand, that certain houses in New York City sell nothing but patent medicines, that they sell them at cut prices and that these houses must make a profit as they continue in business. The answer to this is that these houses *have adjusted their service and their expense account to a patent medicine basis.* When the time comes, if it does, that they carry a complete line of drugs and sundries, they will find that the increase in the expense account will make it impossible to show a profit unless they advance prices.

To sum up the entire matter, it is my conclusion that the drug business of this country is in a very unsatisfactory condition, both for wholesalers and retailers, because the business thinking in the line has dropped into fundamental errors that are sure in the end to work out disastrously to all concerned.

The retailer makes the fundamental mistake of thinking he can sell a large part of his stock, especially goods where there is a quick turn over, at less than the cost of doing business. He believes that this class of selling brings customers into his shop and that he can recover his loss in this part of his business by selling these customers other and more profitable goods. In this idea he is frequently mistaken. *He does not sell enough profitable goods to offset his loss from cut prices.*

Many wholesale houses sell specialties on which they make a very fair profit. These houses are also laboring under the erroneous idea that they can sell 60% of their goods at a loss and recoup their profits on their specialties. Many of these wholesale houses, by taking a careful inventory at the end of the year and pricing their stocks at their actual cash, dollar value, *are finding out what a serious error they have made.*

Retail merchants, in their desire to buy goods cheaper, have joined coöperative establishments. They are giving these establishments their case lot business in quantities and are paying cash while they give the complete service jobbers the skimmed milk part of the business and also expect these jobbers to be very lenient with them when they make slow payments. The retail dealers do not seem to see what is very clear—that if this sort of thing should become general all over the country, the complete service jobber will be compelled to pass out of business. *The coöperative distributor will be forced to put in complete lines and give complete service. When they do this, they will be compelled to advance their prices in order to cover the increased cost of doing business that will result.*

In the last analysis, if we carry through the ideas of the coöperative store to its logical conclusion, the retailer will find that he will not buy goods any cheaper than he does at present. The only difference will be that instead of allowing the present wholesale drug trade of the country to shoulder their own losses in their businesses, the retailer will be compelled to share the losses of his own coöperative wholesale house. The retailer, instead of confining himself to working out his own retail troubles and problems, will find that he will be loaded down also with the troubles and problems of his coöperative wholesale business as well.

Once upon a time there was a Scotchman who decided to train his horse to live

on sawdust. He succeeded very well for a time but unfortunately, just as the horse learned how to eat sawdust, he died. As George Ade would say, the moral of this fable is in its application!

PHARMACY—THEN LET US BE PHARMACISTS.*

WHEREIN IT IS ADVOCATED TO GIVE THE TERMS "PHARMACIST" AND "PHARMACY" A DEFINITE STANDING.

BY JOHN C. KRANTZ, JR.

Pharmacy is now experiencing an era of effective propaganda, to create in the mind of the public a comprehensive conception of the profession of pharmacy and its relation to public health. The pharmaceutical journals have been publishing articles each month, very often written by very eminent pharmacists, with the sole purpose of enhancing the profession and promoting better pharmaceutical ethics.

There is, however, a great obstacle that is standing between better pharmacy and those who are striving to better existing conditions, and that is the usage of what might be designated as pharmaceutical nicknames or synonyms such as—druggist, drug store and drug shop. The indiscriminate use of these terms by pharmacists and the laity have been the means of darkening the public vision of pharmacy and have retarded, by the commercial atmosphere created by them, the expediting of professional pharmacy.

It seems quite unnatural and extraordinarily unusual that a profession would not want to use all of the dignity and respect in a community that its standing will allow. This is true of all professions excepting pharmacy. Thus the dentist uses the impressive title Doctor of Dental Surgery, and the veterinarian the professional title of Doctor of Veterinary Surgery; one has yet to see the dentist or veterinarian who has failed to use the advertising value of his title and call himself a repairer of teeth or animal doctor. The impression established by the use of the title doctor by physicians cannot be overestimated and yet we, who graduate in pharmacy and are qualified by state boards as pharmacists, have adorned ourselves with the commercial, non-professional title, druggist.

The title druggist has grown rapidly and because of its growth it is very difficult to create in the minds of the laity a definite vision of pharmacy, as it appears in the world to-day. The average person does not seem to connect pharmacist with druggist; for this reason there should be only pharmacists who conduct pharmacies (not drug stores or shops); when this change in title is made, in the writer's mind, pharmacy will have laid the cornerstone of a general public identity.

There are some pharmacists who seem to have dodged the word druggist and used such titles as Prescription Chemist, Prescriptionist, Pharmaceutical Chemist, which probably seemed to them to create a professional atmosphere far superior to that created by the title pharmacist. Possibly this is true, but in using these titles, which are all covered by the word "pharmacist," the pharmacist is making it extremely difficult for the laity to conceive of the profession of pharmacy. The word pharmacist is an extremely comprehensive word of Greek origin and signifies "one who is engaged in the practice of pharmacy." Let us then eliminate these trade names and all other delusive titles and have the laity know us as pharmacists who practice pharmacy.

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* Section on Practical Pharmacy and Dispensing, A. Ph. A., Buffalo meeting, 1924.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

AND WHAT IS CULTURE?

BY J. W. STURMER.

("The American Conference of Pharmaceutical Faculties has given some time and attention to the question of the advisability of adding cultural subjects to the pharmacy curriculum. While the minimum course consisted of a two-year course, it was necessary to eliminate all subjects except those that were professional or were fundamental as prerequisites to professional courses. Now that the curriculum is to be extended to three years, there may be opportunity to incorporate subjects that are not directly applicable to pharmacy, the so-called cultural subjects. Dean Sturmer has set forth in a very good way his ideas of what cultural subjects are, and I believe his article will be helpful to Conference members in determining in their own minds what extra courses should be added."—C. B. JORDAN, Editor.)

The Conference has disposed of the problems incident to admission requirements. It is approaching conclusions in regard to the professional subjects of a pharmacy course. The interest now shifts quite naturally to the more extended courses in pharmacy, in which time limitations are less cramping, and thought may be given to a more substantial foundation for the strictly vocational instruction.

There has been casual discussion of the four-year curriculum in which speakers have referred repeatedly to cultural subjects and to culture as an aim in pharmaceutical education. Culture, however, is a word which has acquired a variety of connotations. It may be used in a sense derivable from its etymology, as in the statement, that training in mathematics affords excellent mental culture—meaning development. A refinement of manners and of social conduct is by some spoken of as culture. The term is used, further, to denote the attainment of aesthetic perception; a taste for the fine arts—music, paintings, sculpture, belles lettres, and the like. Then there are those, who, when they say culture, have in mind accomplishments in the art of living, as contrasted with acquirements which are useful in gaining a livelihood. To them cultural education is a training for a fuller and richer life, in contradistinction to professional or vocational schooling.

What, then, did our speakers mean when they talked of culture and of things cultural? Obviously, we must understand each other if we are to enter purposefully upon a debate in which the discussion has to do with the culture value of particular courses, or with cultural training in general. A confusion of tongues, as at the Tower of Babel, will tend to the development of much heat, with little or no light.

I take it that most speakers used the term culture to designate subjects not classifiable as pharmaceutical; that the training they had in mind bears to the professional subjects of a pharmacy course the same relation which premedical education bears to a course in medicine. And this being the case, would it not be conducive to clarity, and to mutual understanding, if we avoided the ambiguous term cultural education, and spoke of pre-professional subjects?

Medical men call their pre-professional work the pre-medical course. They say little or nothing about its cultural results, but justify every subject on the grounds of its utilitarian value—as a foundation for the superstructure which is the course in

medicine. Thus, physics and chemistry provide the ground-work for physiological and clinical chemistry. Biology prepares the way for bacteriology, and indeed for a number of the strictly medical studies. Mathematics is preparatory to physics and to chemistry. English is in the fullest sense a foundational or basal subject, helpful to the student in understanding his textbooks and lectures, in preparing his notes, in phrasing his answers in the examination, reporting his researches, and in maintaining, after graduation, his position as a member of a learned profession.

If, now, we study the curricula of engineering, or of the other applied sciences taught in the conventional four-year college courses, we find in the freshman and sophomore schedules, a selection of foundational studies which are truly and directly preparatory to the professional subjects in prospect in the higher college years. And no one would accuse our American universities and colleges of being oblivious to the cultural potentialities of a science course.

The problems of a satisfactory four years' course in pharmacy are analogous to the problems of a four-year course in any other applied science; and to the problems of pre-medical and medical education. The Conference can discuss with profit, and with the expectation of ultimate agreement, matters pertaining to pre-professional education for pharmacy students. It cannot, I fear, be expected to deal competently and wisely with the cultural aspects of such education. If we select the subjects with a view to their utility, we are on solid ground. We can compare, and measure, and weigh, and talk about logical sequences. But when it comes to a consideration of the comparative cultural worth of subjects, we are confronted by the fact that these values are immeasurably influenced by the human equation, are, in other words, largely determined by the personality of the teacher. Indeed, we might go so far as to contend that some professional subjects may be so presented as to offer greater cultural possibilities than history or the languages, if the latter be in charge of a teacher not mindful of his opportunities in this direction.

George Bernard Shaw made a profound philosophic observation when he said that "happiness is a by-product." And I am inclined to believe that culture, in the broad American acceptation of the term, is, similarly, not the primary aim of a college education but its by-product.

If then we plan our four-year course as a liberal yet specific training for the tasks of the calling, we may be assured that our students, in their preparation for life's work, will gather also, as a by-product, a fair measure of culture, to enrich their lives, and to augment their capacity for happiness.—And on this basis the Conference can plan a satisfactory four-year course.

THIRD ANNUAL NORTHWEST DRUG EXPOSITION AND MINNESOTA PHARMACEUTICAL ASSOCIATION MEETING.

The third annual Northwest Drug Exposition is to be held in St. Paul, Minn., during the second week in February. The University of Minnesota and other educational institutions plan to have on exhibit numerous plants grown in the Northwest and used for medicinal purposes. This display will be supplemented by similar exhibits of plants grown throughout the world, illustrating the widely separated sources from which the retail pharmacist draws his prescription supplies.

During the week of the drug show, the Minnesota State Pharmaceutical Association will stage its annual convention in St. Paul. The Northwest Branch of the A. Ph. A., the Rexall clubs of the Northwestern states, and the fifth district of the National Association of Boards of Pharmacy are expected to participate.

UNITED STATES PHARMACOPŒIA.

TENTH REVISION.

ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.*

BIO-ASSAYS AND PROXIMATE ASSAYS.

PART VII.

BIO-ASSAYS.

The Pharmacopœial Convention of 1920 recommended that abstracts of changes proposed for the U. S. P. X and new standards and descriptions be published before final adoption, that those who are not members of the Revision Committee may have an opportunity for comment and criticism.

In compliance with this recommendation, the following abstracts are submitted. The nomenclature and the exact wording of the text do not necessarily represent that to be finally adopted and doses have not been appended.

Comments should be sent to the Chairman of the Revision Committee.

E. Fullerton Cook,
636 South Franklin Square,
Philadelphia, Pa.

GENERAL NOTE.

The following Bio-Assays are proposed as requirements for the U. S. P. X, as authorized by the 1920 Convention. In order to facilitate the adoption of these standards and to provide a greater degree of uniformity in the application of these assays, the Bureau of Chemistry of the U. S. Department of Agriculture at Washington, have indicated their willingness to supply substances conforming to the new pharmacopœial standards.

The assays are published in sufficient detail to permit those who are familiar with Bio-Assays to critically examine the processes. The wording is not necessarily that of the final texts.

Aconitina.

Aconitine, administered subcutaneously to guinea-pigs, has a minimum lethal dose of not less than 0.000,000,055 Gm. and not more than 0.000,000,065 Gm. for each gram of body weight of guinea-pig.

Assay.—Dissolve the Aconitine in distilled water with the aid of a little acetic acid and proceed as directed under *Tinctura Aconiti.*

Aconitum.

Aconite, in the form of the tincture, administered subcutaneously to guinea-pigs, has a minimum lethal dose not exceeding 0.000,04 Gm. for each gram of body weight of guinea-pig.

Assay.—Prepare a Tincture according to the official process, and assay as directed under *Tinctura Aconiti.*

Tinctura Aconiti.

Tincture of Aconite, administered subcutaneously to guinea-pigs, has a minimum lethal dose of not less than 0.000,35 cc. and not more than 0.000,45 cc. for each gram of body weight of guinea-pig.

Assay.—Use guinea-pigs weighing from 275 Gm. to 325 Gm. each, and in good health. Dilute the Tincture with distilled water to make the dose about 1 cc. and inject into the guinea-pig, under the skin of the abdomen. The standard dose must kill within six hours at least two of every three guinea-pigs injected.

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J. H. Beal,
801 West Nevada Street,
Urbana, Illinois.

Cannabis.

Cannabis, in the form of the fluidextract, administered by the mouth to dogs in doses not exceeding 0.1 cc. for each kilogram of body weight of dog, produces a degree of incoördination equivalent to that caused by the same dose of the standard fluidextract of cannabis, prepared as directed below.

Standard Fluidextract of Cannabis.

Prepare a composite fluidextract, representing at least ten different lots of cannabis, conforming to the official botanical description, and administer this fluidextract in gelatin capsules to dogs by the mouth. This standard fluidextract must be so adjusted that it will produce incoördination in dogs which have been found to be susceptible to the action of cannabis when administered in doses of 0.03 cc. for each kilogram of body weight of dog.

Assay.—Use adult dogs which weigh less than 15 kilograms and which are susceptible to the action of cannabis. The dogs must not be fed for twelve hours before being used and observations should be made within one hour after administration. The same animal must not be used for testing purposes at shorter intervals than three days. Administer the fluidextract in gelatin capsules by the mouth.

Extractum Cannabis.

Extract of cannabis, administered by the mouth to dogs, in doses not exceeding 0.004 Gm. for each kilogram of body weight of dog, produces a degree of incoördination equivalent to that caused by 0.03 cc., for each kilogram of body weight of dog, of the standard fluidextract of cannabis prepared as directed under *Cannabis*.

Assay.—Administer the Extract in gelatin capsules, proceeding as directed under *Cannabis*.

Fluidextractum Cannabis.

Fluidextract of cannabis, administered by the mouth to dogs in doses not exceeding 0.1 cc. per kilogram of body weight of dog produces the same degree of incoördination as that produced by an equivalent dose of the standard fluidextract of cannabis, prepared as directed under *Cannabis*.

Assay.—Proceed as directed under *Cannabis*.

Digitalis.

Digitalis, in the form of the tincture, properly diluted and injected into the ventral lymph sac of a frog, has a minimum systolic dose (the minimum dose producing in one hour a stoppage of the ventricle of the heart in systole) not exceeding 0.006 cc. of tincture, equivalent to 0.000,000,5 Gm. of ouabain, for each gram of body weight of frog.

Assay.—Prepare a tincture according to the official process, and proceed as directed under *Tinctura Digitalis*.

Tinctura Digitalis.

Tincture of Digitalis, injected into the yentral lymph sac of a frog, has a minimum systolic dose of not less than 0.0055 cc. and not more than 0.0065 cc. equivalent to not less than 0.000,000,46 Gm. and not more then 0.000,000,54 Gm. of ouabain, for each gram of body weight of frog.

Assay.—Use healthy frogs of the same species (*Rana pipiens Schreber*) and of a fairly uniform size (20 to 30 Gm.).

Storage.—Before use, the frogs should be stored in constant temperature tanks, preferably where the temperature does not rise above 15° C. The bottom of the tanks should be covered with running water. The day before the frogs are to be used, a sufficient number should be taken from the storage tanks and placed in a tank, the temperature of which is approximately 20° C. One hour before the assay, they are weighed to within 0.5 Gm. and placed in wire cages or containers in a tank containing water to the depth of about 1 cm. ($^1/_2$ inch), the water being kept at a uniform temperature of 20° C. during the assay.

Dosage.—The doses of the tincture to be given the frogs are calculated according to the weights of the frogs and are injected into the ventral lymph sac by means of a pipette or glass syringe which is graduated in hundredths of a cubic centimeter. The injection is made into the lymph sac through the floor of the mouth, care being taken not to puncture the skin. The amount of fluid to be injected into the different frogs should be as uniform in quantity as possible, approximately 0.015 cc. for each gram of body weight of frog. In case the alcohol content in any preparation after dilution is higher than 20 per cent. the preparation may be subjected to careful evapo-

ration and subsequent addition of distilled water until the original volume is restored and the alcohol content is not above the per cent. named. The animal is replaced in its cage in the tank after injection, the temperature being maintained at 20° C.

About fifty-eight minutes from the time of injection, each frog is pithed, the heart is exposed and its condition examined. For the correct end-reaction, at the expiration of one hour from the time of injection, the ventricle must be in systolic standstill, while the auricles are widely dilated. Following mechanical stimulation, feeble contractions may occur in the auricles and localized contractions in the ventricle, but no general contraction is allowable.

If, when the lymph sac is opened to expose the heart, any of the injected drug is found unabsorbed, the animal must be discarded and not considered in the results obtained.

Liquor Epinephrini Chloridi.

Solution of epinephrine hydrochloride, diluted with physiological solution of sodium chloride and injected intravenously into dogs by the method described below, produces a rise in the systolic blood pressure of the dog, corresponding to that produced by an equivalent amount of standard solution of epinephrine hydrochloride prepared as directed below.

Standard Solution of Epinephrine Hydrochloride.

Prepare a standard solution of epinephrine hydrochloride from epinephrine by dissolving 0.050 Gm. of epinephrine in 5 cc. of tenth-normal hydrochloric acid and dilute this to 50 cc. by the addition of distilled water to make a 1 in 1000 solution. On account of the possibility of deterioration, this standard solution must have been recently prepared. It will keep for a short time (two or three weeks) if preserved in amber-colored bottles and stored in a refrigerator but it must be discarded if any signs of deterioration, such as discoloration, are observed.

Assay.—For the assay, the standard 1 in 1000 solution must be diluted by adding 1 cc. of the said solution to 99 cc. of physiological solution of sodium chloride. This dilute solution (1 in 100,000) must not be used if more than eight hours old.

The solution of epinephrine hydrochloride to be tested is diluted by adding 1 cc. of the solution to 99 cc. of physiological solution of sodium chloride and thoroughly mixing the same.

Dogs.—The dogs to be used should be of medium size and be anesthetized with a suitable anesthetic. They are prepared for blood pressure estimations by the insertion of a cannula into a carotid artery, connecting the same with a mercury manometer. The trachea may also be exposed and a cannula inserted so that the animals may receive artificial respiration during the course of the experiment if necessary. The injections are made into the exposed femoral vein.

Before a test is made, in case any muscular movement such as twitching is present, the dog should receive by intravenous injection a sufficient dose of curare (page —), but if the animal is deeply anesthetized, this is not necessary. The dog should also receive a sufficient dose of atropine sulphate (from 0.001 Gm. to 0.002 Gm.) to paralyze the vagi, this paralysis being proved by electrical stimulation. The blood pressure tracing is recorded on a kymograph.

Injections must be made at regular intervals of approximately five minutes. The rise of blood pressure must be submaximal (from 30 to 60 mm.). In case this figure is much exceeded, a second test injection of a small amount may be made five minutes later. After a satisfactory dose has been ascertained, the uniformity of reaction should be tested by the injection of two or more doses of equal size, if these injections produce approximately equal increases in blood pressure, alternate injections of the solution of unknown strength and of the standard are made, varying the amount of the unknown, until two or more successive injections raise the blood pressure to the same height, indicating that the amount of active agent is the same in the doses used. From the results thus obtained the strength of the unknown solution may be determined and adjusted.

Ergota.

Ergot, in the form of the fluidextract, administered by intramuscular injection to single-comb, white Leghorn cocks, in doses not exceeding 0.5 cc. for each kilogram of body weight of cock, produces a darkening of the comb, corresponding in intensity to that caused by the same dose of a standard fluidextract of ergot, prepared as directed below.

Standard Fluidextract of Ergot.

Prepare a composite fluidextract, representing at least ten different lots of ergot, conforming to the official botanical description.

This standard fluidextract, which must be aged for at least six months before being standardized and must be preserved in a vacuum, when administered by intramuscular injection in doses not exceeding 0.5 cc. per kilogram of body weight of cock produces darkening of the comb, of a single-comb, white leghorn cock, which is less than eighteen months of age, and which weighs approximately 2 kilograms.

Assay.—Use single-comb, white Leghorn cocks, which are less than eighteen months of age, and weigh approximately 2 kilograms. Injections are made deeply into the breast muscles, and the effects are observed within one hour to one hour and a half after the administration of the drug. The same cock must not be used for testing purposes at shorter intervals than two weeks.

Fluidextractum Ergotæ.

Fluidextract of ergot, administered by intramuscular injection to single-comb, white Leghorn cocks, in doses not exceeding 0.5 cc. for each kilogram of body weight of cock, produces a darkening of the comb, corresponding in intensity to that caused by the same dose of the standard fluidextract of ergot prepared as directed under *Ergota*.

Assay.—Proceed as directed under *Ergota*.

Liquor Pituitarii.

Solution of pituitary contains the water-soluble, principle or principles from the fresh posterior lobe of the pituitary body of cattle, 1 cc. having an activity upon the isolated uterus of the virgin guinea-pig, corresponding to not less than 80 per cent. and not more than 120 per cent. of that produced by 0.005 Gm. of the standard, dried, defatted powdered gland, prepared as directed below.

Standard Powdered Pituitary Gland.

Prepare the standard in the following manner: Select a number of absolutely fresh posterior lobes (at least 25), of the pituitary body of cattle, carefully dissect them free from all extraneous material, and drop them into not less than 150 cc. of acetone. After three hours cut the glands into small bits with scissors, place the cut glands in fresh acetone, and allow to stand over night. Then dry them in a vacuum desiccator over calcium chloride at a temperature not above 50° C. for five hours. Grind the material in a mortar until it will pass through a No. 40 sieve and again dry for at least twelve hours in a vacuum desiccator over calcium chloride. Extract this material in a small Sohxlet extraction apparatus with acetone for three hours, and again dry in a desiccator over calcium chloride for twelve hours. The powder is now ready for use. It should be preserved in the dark in sealed ampuls *in vacuo*, or in vacuum desiccators over calcium chloride.

Assay.—Prepare the solution for use in the assay as follows: Weigh a suitable amount of the dry standard powder very carefully. Place it in a small agate mortar, and moisten with a few drops of 0.25 per cent. acetic acid, added from a burette. Triturate the moistened powder thoroughly until of an impalpable frothy consistence. Add a few cc. of 0.25 per cent. acetic acid and stir the mixture thoroughly. Wash it into a hard glass test-tube or beaker, adding enough of the dilute acetic acid from the burette to make the final volume correspond in number of cc. to the number of milligrams of the dry powder taken. Heat the mixture to the boiling point and filter. The filtrate contains in each cc. the active principles of 1 milligram of dry powder. Preserve this solution in hard glass ampuls and sterilize by fractional sterilization at a temperature not exceeding 100° C.

The apparatus used for making the test may be any modification of the general type for studying the activity of the isolated smooth muscle of mammals. It must be provided with an accurate temperature-regulating device, and the chamber in which the uterus is suspended must have a capacity of not less than 100 cc.

The Locke-Ringer solution should have the following composition:

Sodium chloride	0.9	Gm.
Potassium chloride	0.042	Gm.
Calcium chloride crystals	0.024	Gm.
Magnesium chloride	0.0005	Gm.
Sodium bicarbonate	0.05	Gm.
Dextrose	0.05	Gm.
Freshly glass-distilled water	100	cc.

All of the salts and the dextrose must be of the highest purity obtainable. The solution must be made up fresh each day. The individual constituents (except the dextrose) may be made up in more concentrated stock solutions and diluted as needed.

Use healthy guinea-pigs weighing between 175 Gm. and 350 Gm. They should not have been pregnant and should not be in heat. It is recommended that young female pigs be segregated at the time of weaning and kept thereafter out of sight and smell of the males.

Kill the guinea-pig by a blow on the head, or by decapitation, and remove the entire uterus from the body. Suspend a part or all of one horn in the chamber of warm oxygenated Locke-Ringer solution, (page —), and weighted as necessary. A temperature of the bath of between 37° and 38° C. is satisfactory, but a uniform temperature throughout an assay is essential. When relaxation is complete, add alternate doses of the standard and the unknown extract to the muscle chamber until quantities of the two are found which give submaximal contractions of the same amplitude in at least two successive sets of contractions. The strengths of the standard and the unknown extracts are then in inverse ratio to the quantities necessary to produce equal contractions.

Scilla.

Squill, in the form of the tincture, properly diluted and injected into the ventral lymph sac of a frog has a minimum systolic dose (minimum dose producing in one hour a stoppage of the ventricle of the heart in systole) not exceeding 0.006 cc. of tincture, equivalent to 0.000,000,5 Gm. of ouabain, for each gram of body weight of frog.

Assay.—Prepare a tincture according to the official process and proceed as directed under *Tinctura Digitalis.*

Tinctura Scillæ.

Tincture of Squill, injected into the ventral lymph sac of a frog, has a minimum systolic dose of not less than 0.0055 cc., and not more than 0.0065 cc. equivalent to not less than 0.000,000,46 Gm. and not more than 0.000,000,54 Gm. of ouabain for each Gm. of body weight of frog.

Assay.—Proceed as directed under *Tinctura Digitalis.*

Strophanthus.

Strophanthus, in the form of the tincture, properly diluted and injected into the ventral lymph sac of a frog, has a minimum systolic dose (the minimum dose producing in one hour a stoppage of the ventricle of the heart in systole) not exceeding 0.000,06 cc. of tincture, equivalent to 0.000,000,5 Gm. of ouabain, for each gram of body weight of frog.

Assay.—Prepare a tincture according to the official process and proceed as directed under *Tinctura Digitalis.*

Tinctura Strophanthi.

Tincture of Strophanthus, injected into the ventral lymph sac of a frog, has a minimum systolic dose of not less than 0.000,055 cc. and not more than 0.000,065 cc., equivalent to not less than 0.000,000,46 Gm. and not more than 0.000,000,54 Gm. of ouabain, for each Gm. of body weight of frog.

Assay.—Proceed as directed under *Tinctura Digitalis.*

FOOD AND NUTRITION BULLETINS READY.

Following the expansion and development of the Bureau of Home Economics, it is hoped that new bulletins dealing with phases of home problems will be issued by the U. S. Department of Agriculture. At present bulletins on food and nutrition far outnumber those on other home economics subjects. Over 100 popular and technical bulletins on foods and nutrition resulting from the research work of this department are now available free or by purchase for nominal sums. These represent the work now organized under the Bureau of Home Economics as well as of the Bureaus of Chemistry and of Animal Industry.

The Bureau of Roads has contributed through its engineering division several bulletins on household heating and farm sewage disposal. A few other publications have been issued on household equipment, textiles, and some of the economic problems of the home.

PROXIMATE ASSAYS.

GENERAL DIRECTIONS FOR ALKALOIDAL ASSAYS.

Accurate results in alkaloidal assays are dependent upon familiarity with the principles involved and experience in the technique.

Fineness of Powders.

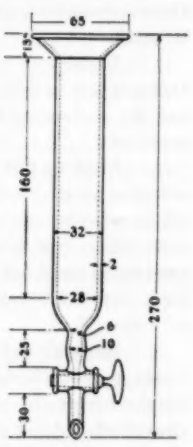
The portion to be assayed, which must represent the entire drug, is to be in powder of specific fineness. This is interpreted to mean that the drug powder must not be coarser than the size specified, but finer powders may also be used.

Extraction of the Alkaloids.

Aliquot Part Method.—For the extraction of the powdered drug, macerate the quantity directed in the specified quantity of solvent, contained in a cork-stoppered flask or bottle of excess capacity in the presence of an alkali, for a definite time with intermittent or continuous shaking. The time for maceration is one hour of continuous or two hours of intermittent shaking in which latter case agitate the container vigorously for one minute at intervals of not more than fifteen minutes. Then allow the drug to macerate over night, again shake it intermittently during one-half hour and allow to settle until the supernatant liquid is clear. This clarification may be hastened by vigorous agitation after the addition of a few cc. of water.

This method involves the taking of an aliquot part of the solvent and requires that the solvent shall have been accurately measured and that the aliquot portion taken shall have also been measured with equal care at approximately the same temperature. Loss by evaporation or leakage must be avoided by the use of tightly-fitting cork stoppers.

Total Extraction Method.—The extraction of the powdered drug is accomplished by percolating the quantity directed with the specified solvent in the presence of an alkali. Place the drug, thoroughly moistened with the solvent, in a small cylindrical percolator (see illustration), and allow to stand for not less than five minutes. Then add the alkali, mix it with the drug, and macerate for one hour. Now pack the drug firmly and percolate with the solvent until completely extracted. Any suitable percolator may be used, but one similar in form and size to that illustrated is recommended.



Percolator recommended for Type Process B (measurements are given in millimeters).

Extraction with Immiscible Solvents.—For the extraction of an ethereal or chloroformic solution of the alkaloids, use dilute acid. The strength of the acid and the quantity employed are left to the discretion of the operator, but it is advisable to use as small quantities as can be conveniently handled. Shaking should not be violent, but should be sufficient to mix the liquids thoroughly. The extraction with acid must be repeated until the alkaloid is completely removed from the ethereal or chloroformic liquids. Each portion of acid solution as drawn off should be filtered through cotton or filter paper. If preferred, the combined acid solutions may be washed with a little chloroform or ether, this, in turn, washed with distilled water and the water added to the acid solution.

In shaking out an alkaline aqueous solution with an immiscible solvent, the process must be repeated until the extraction of the alkaloid is complete. Each portion of solvent as drawn off should be filtered through cotton or filter paper.

Care must be taken to avoid loss of alkaloidal solutions through imperfect separation, creeping, or other similar conditions.

Ether-Chloroform Mixture.—When a mixture of ether and chloroform is employed, the proportion of the mixture is to be three volumes of ether and one volume of chloroform cooled to working temperature after being mixed.

Evaporation of Solvents.—The evaporation of the final alkaloidal solution may be conducted by distillation, by evaporation on a water-bath, or by means of a current of warm air. In the case of chloroform solutions, the residue should be treated with ether or alcohol which is in turn evaporated to carry off the last traces of chloroform.

Titration of the Alkaloid.—When the alkaloid is to be estimated by titration, the residue is dissolved in neutralized alcohol, the volumetric acid, accurately measured, is added, and followed

by a convenient quantity of distilled water. The excess of acid is determined by titration. If preferred the residue is dissolved in ether or chloroform, the volumetric acid and distilled water added, and the ether or chloroform expelled by gentle heat before titrating.

Indicators.—The indicators to be employed in the titration of alkaloids are cochineal T. S. and methyl red T. S. These are interchangeable and either may be used at the discretion of the operator.

Type Process For Alkaloidal Assays.

TYPE PROCESS A FOR DRUGS—ALIQUOT PART METHOD.

Extraction of the Drug.—Place the accurately weighed drug in a dry flask or bottle of suitable capacity, add the required volume of solvent, accurately measured, stopper securely with a well-fitting cork stopper and shake. Allow to stand for at least five minutes, add 10 cc. of ammonia T. S., stopper tightly and shake for one hour in a mechanical shaker or intermittently during two hours. In case of intermittent shaking, agitation must be vigorous for at least one minute and be repeated at intervals of not more than fifteen minutes. Allow the mixture to stand over night, again shake intermittently during one-half hour and then allow the drug to settle. If the supernatant liquid is not clear, add a few cc. of distilled water, shake vigorously and again allow to settle.

Decant an aliquot part of the liquid, accurately measured, at approximately the same temperature at which the original solvent was measured. Transfer the liquid to a separator, rinsing the measuring container with a small quantity of the solvent and adding the rinsing to the separator.

Shaking out with Acid.—Completely extract the alkaloid from the ethereal or chloroformic solution by shaking with successive portions of dilute sulphuric acid, filtering each portion drawn off or washing with ether or chloroform if preferred. After extracting with several portions of acid, test a few drops of the last portion used for the presence of alkaloid. Extraction must be continued until not more than a very faint cloudiness results upon the addition of a drop of mercuric potassium iodide T. S. or, in the case of hydrastis and colchicum, upon the addition of a drop of iodine T. S.

Shaking out with Immiscible Solvent.—Add a portion of the specified solvent to the combined acid solutions and make the mixture alkaline with ammonia T. S. Completely extract the alkaloid from the aqueous liquid with successive portions of the solvent, filtering each portion as drawn off. After extracting with several portions of the solvent, evaporate about 1 cc. of the last portion used, dissolve the residue in a few drops of dilute acid and test for the presence of alkaloid. Extraction must be continued until not more than a very faint cloudiness results upon the addition of a drop of mercuric potassium iodide T. S. or, in the case of hydrastis and colchicum, upon the addition of a drop of iodine T. S.

Determination of Alkaloidal Content.—Determine the alkaloid volumetrically or gravimetrically as directed.

Volumetric Determination.—Evaporate the solvent and dissolve the residue in neutralized alcohol, chloroform, or ether. Add an excess of tenth-normal sulphuric acid and a convenient quantity of distilled water and if chloroform or ether were used, expel it by gentle heat. Determine the excess of acid by titration with fiftieth-normal sodium hydroxide, using cochineal T. S. or methyl red T. S. as indicator.

Gravimetric Determination.—Evaporate the solvent in a tared flask or beaker and if the solvent were chloroform, treat the residue with two small portions of neutral alcohol, and evaporate to dryness after the addition of each portion. Dry the residue to constant weight at 100° C. and weigh.

TYPE PROCESS B FOR DRUGS—TOTAL EXTRACTION METHOD.

Extraction of the Drug.—Place an accurately weighed quantity of the ground drug in a small cylindrical percolator (page —), previously prepared by packing the outlet with cotton. Add a sufficient amount of the solvent to saturate the drug completely and mix thoroughly. Cover the percolator and allow it to stand at least five minutes, then add the specified amount of ammonia T. S. and mix this thoroughly with the drug. After macerating for one hour pack the drug firmly, place a pledget of cotton above the drug and percolate slowly with the solvent

until the drug is completely extracted. The percolation must be continued until, upon evaporating 3 or 4 cc. of the percolate, dissolving the residue in a few drops of dilute acid and adding a drop of mercuric potassium iodide T. S., only a faint cloudiness results.

From this point proceed as directed under *Type Process A*—beginning with the words "Shaking out with Acid," page —.

TYPE PROCESS C FOR GALENICAL PREPARATIONS—ALIQUOT PART METHOD.

Preparation of the Sample. *Powdered Extracts.*—When extracts are assayed by the aliquot method, they are to be treated as directed under the powdered drug. Place an accurately-weighed quantity of the powdered extract in a dry flask or bottle, cover it with the specified volume of solvent and diffuse by gentle shaking. After standing at least five minutes, add a 10-cc. portion of ammonia T. S., stopper the container tightly with a well-fitting cork, previously wetted with water and shake the mixture continuously or intermittently for the time specified. Decant an aliquot portion and treat as directed in Type Process A, beginning with the words "Shaking out with acid." If the extract has a tendency to form lumps in the solvent, mix it with an equal bulk of clean sand or powdered pumice. If lumps form after the addition of the ammonia, they should be disintegrated by the addition of a little water.

Pilular Extracts.—Liquefy an amount of extract, accurately weighed, approximating the quantity directed, and warm with sufficient diluted alcohol, or with the menstruum used in making the extract, stirring with a glass rod. To the thoroughly liquefied extract, contained in a small evaporating dish, add sufficient sawdust or other suitable material (page —) to absorb the liquid, and dry at a temperature not exceeding 60° C. Transfer the dry mixture to a flask or bottle containing the specified quantity of solvent, and remove any traces of material adhering to the dish by rinsing with successive small portions of ammonia T. S. using a total of 10 cc., and adding the ammoniacal rinsings to the solvent. Continue the process as directed under Type Process A.

Fluidextracts.—Pipette fluidextracts directly upon the sawdust, or other suitable material (page —), contained in a small evaporating dish, dry at a temperature not exceeding 60° C. and transfer as directed under *Pilular Extracts* to a flask or bottle containing the specified quantity of solvent. Then proceed as directed under Type Process A, beginning with the words "Shaking out with acid."

Tinctures.—Concentrate the specified quantity of tincture, by evaporation at a temperature not exceeding 60° C., to a volume of about 10 to 15 cc., add sufficient sawdust or other suitable material (page —) to absorb the liquid, and continue the heat until dry. Transfer the dry mixture as directed under *Pilular Extracts* to a flask or bottle, containing the specified quantity. Then proceed as directed under Type Process A, beginning with the words "Shaking out with acid."

Absorbents.—The absorbents employed may be sawdust, gauze, cheesecloth, paper pulp, asbesto fibre, absorbent cotton, or any similar suitable substance. Sawdust should be clean, not resinous, and must not show the presence of alkaloids when tested as follows: Macerate a 5 Gm. portion in 50 cc. of an ether-chloroform mixture, containing 10 cc. of ammonia T. S., shaking frequently during two hours. Decant 10 cc. of the clear ethereal liquid, evaporate to dryness on a watch glass, and treat the residue with 1 cc. of diluted sulphuric acid. Test portions of the acid liquid for alkaloids with mercuric potassium iodide T. S. and with iodine T. S.

If necessary, sawdust may be purified for use in assays by extracting it in a percolator, first with a 1 per cent. solution of sodium hydroxide, then with a 1 per cent. solution of hydrochloric acid, finally washing with distilled water until free from acid and soluble salts, and drying. The last portions of the acid percolate must give no test for alkaloid with mercuric potassium iodide T. S. or with iodine T. S.

TYPE PROCESS D FOR GALENICAL PREPARATIONS—TOTAL EXTRACTION METHOD.

Preparation of the Sample. *Powdered and Pilular Extracts.*—Liquefy an amount of extract, accurately weighed, approximating the quantity directed, and digest in about 10 cc. of diluted alcohol, or in the menstruum used in making the extract. Transfer the liquid to a separator containing a portion of the specified solvent, and rinse all traces of the extract from the dish, using small portions of diluted alcohol, or menstruum, and adding the rinsings to the separator. Dilute the alcoholic liquid with an equal quantity of distilled water, add sufficient ammonia T. S. to make it decidedly alkaline, and completely extract the alkaloids by shaking with successive

portions of the solvent. Complete the assay as directed under Type Process A, beginning with the words "Shaking out with acid."

Fluidextracts.—Pipette fluidextracts directly into a separator containing a portion of the specified solvent, add a volume of distilled water about equal to that of the fluidextract taken, render the liquid alkaline by the addition of a few drops of ammonia T. S., and completely extract the alkaloids by shaking out with successive portions of the solvent. Complete the assay as directed under Type Process A, beginning with the words "Shaking out with acid."

Tinctures.—Concentrate the specified quantity of tincture, by evaporation at a temperature not exceeding 60° C., to a volume of about 10 to 20 cc. Transfer the concentrated liquid to a separator containing a portion of the specified solvent, and rinse all traces of the liquid from the dish, using small portions of diluted alcohol, and adding the rinsings to the separator. Add a volume of distilled water equal to that of the alcoholic liquid, render the liquid alkaline by the addition of a few drops of ammonia T. S., and completely extract the alkaloids by shaking out with successive portions of the solvent. Complete the assay as directed under Type Process A, beginning with the words "Shaking out with acid."

Aconite.—The chemical assay is to be omitted, bio-assay retained.

Tinctura Aconiti.—The chemical assay is to be omitted, bio-assay retained.

Asafœtida.—No change in U. S. P. IX assay, except to dry filters and residue at 100° C. instead of 115° C.

Belladonna Folia. *Assay.*—Proceed by Type Process B using 10 Gm. of Belladonna Leaves, in fine powder, ether-chloroform mixture for percolating the drug, and chloroform as the immiscible solvent for extracting the alkaloid from the aqueous liquid. Determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the total alkaloids of Belladonna Leaves (Proximate Assays, page —).

Extractum Belladonnæ (Pilular). *Assay.*—Proceed by Type Process D, taking 2 Gm. of Pilular Extract of Belladonna, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the total alkaloids of belladonna leaves (Proximate Assays, page —).

Extractum Belledonnæ (Powdered). *Assay.*—Proceed as directed under *Pilular Extract of Belladonna.*

Tinctura Belladonnæ. *Assay.*—Proceed by Type Process D, taking 100 cc. of Tincture of Belladonna, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid consumed corresponds to 0.02893 Gm. of the total alkaloids of belladonna leaves (Proximate Assays, page —).

Belladonnæ Radix. *Assay.*—Proceed by Type Process B, using 10 Gm. of Belladonna Root in fine powder, ether-chloroform mixture for percolating the drug, and chloroform as the immiscible solvent for extracting the alkaloid from the aqueous liquid. Determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the total alkaloids of belladonna root (Proximate Assays, page —).

Fluidextractum Belladonnæ Foliorum. *Assay.*—Proceed by Type Process D, taking 10 cc. of Fluidextract of Belladonna Leaves, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of belladonna leaves (Proximate Assays, page —).

Fluidextractum Belladonnæ Radicis. *Assay.*—Proceed by Type Process D, taking 10 cc. of Fluidextract of Belladonna Root, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of belladonna root (Proximate Assays, page —).

Emplastrum Belladonnæ. *Assay.*—Introduce 10 Gm. of Belladonna Plaster into a 100-cc. flask. (If the plaster is spread on fabric, cut the portion to be assayed into strips, weigh accurately, and introduce it into the flask.) Now add 50 cc. of chloroform, and shake the mixture until the plaster is dissolved. Pour the chloroform solution into a 250-cc. beaker and wash the cloth upon which the plaster was spread with two portions of 25 cc. each of chloroform, adding the washings to the chloroform solutions in the beaker. Then wash this cloth with 80 cc. of alcohol containing 1 cc. of ammonia T. S. and pour the washings into the chloroform solution in the beaker. Stir the mixture gently and allow it to stand until the rubber has separated into a compact mass. Dry the cloth upon which the plaster was spread, weigh it and subtract its weight from the original

weight of the plaster. Pour the chloroform-alcohol solution into a 250-cc. separator, rinse the beaker and rubber with 10 cc. of alcohol and add the rinsing to the separator. Completely extract the alkaloids from the chloroform-alcohol solution by shaking it out repeatedly with weak sulphuric acid. Collect the cold washings in a separator and add ammonia T. S. until the solution is decidedly alkaline to litmus paper, and completely extract the alkaloids by shaking out repeatedly with chloroform. Filter the chloroform solution through a pledget of purified cotton, evaporate it to dryness and dissolve the alkaloids from the residue in exactly 5 cc. of tenth-normal sulphuric acid, and titrate the excess of acid with fiftieth-normal sodium hydroxide, using cochineal T. S. as indicator. Each cc. of tenth-normal sulphuric acid consumed corresponds to 0.02893 Gm. of the alkaloids from belladonna leaves.

Cinchona. *Assay.*—Heat 5 Gm. of Cinchona, in fine powder, for one hour, in a 500-cc. flask on a water-bath, with 5 cc. of diluted hydrochloric acid and 10 cc. of distilled water. Cool, add 200 cc. of ether-chloroform mixture, and 10 cc. of stronger ammonia T. S. Proceed by Type Process A, decanting an aliquot portion of 160 cc. representing 4 Gm. of Cinchona. Use chloroform for the final extraction and determine the alkaloids gravimetrically (Proximate Assays, page —).

Fluidextractum Cinchonæ. *Assay.*—Proceed by Type Process C, taking 5 cc. of Fluidextract of Cinchona with 1 cc. of hydrochloric acid, and using 200 cc. of ether-chloroform mixture for maceration. Decant an aliquot portion of 160 cc., representing 4 cc. of Fluidextract of Cinchona, using chloroform for the final extraction, and determine the alkaloids gravimetrically (Proximate Assays, page —).

Tinctura Cinchonæ. *Assay.*—Proceed by Type Process C, taking 25 cc. of Tincture of Cinchona, using 200 cc. of ether-chloroform mixture and decanting an aliquot portion of 160 cc. of the ethereal solution representing 20 cc. of Tincture. Use chloroform for the final extraction and determine the alkaloids gravimetrically (Proximate Assays, page —).

Tinctura Cinchonæ Compositæ. *Assay.*—Proceed by Type Process C, taking 50 cc. of Compound Tincture of Cinchona, using 200 cc. of ether-chloroform mixture and decanting an aliquot portion of 160 cc. representing 40 cc. of the Tincture. Use chloroform for the final extraction and determine the alkaloids gravimetrically (Proximate Assays, page —).

Extractum Colchici. Place 6 Gm. of Extract of Colchicum in a 500-cc. flask, containing 275 cc. of distilled water, mix well, add 10 cc. of solution of lead subacetate, and agitate the mixture frequently during one hour. Filter off 200 cc. and proceed as directed under *Colchici Semen*, page —, seventh line of the assay, beginning with the word "Shake."

Colchici Semon. *Assay.*—Place 15 Gm. of Colchicum Seed, in fine powder, in a 500-cc. flask, and add 290 cc. of distilled water and 10 cc. of solution of lead subacetate. Weigh the flask and contents, and digest the mixture at from 60° to 70° C. for three hours, with occasional agitation. Cool, add distilled water to restore the original weight and filter off 200 cc. Add 2 Gm. of sodium phosphate to the clear filtrate, or sufficient to completely precipitate the lead, shake the mixture frequently during half an hour, and filter off 100 cc., representing 5 Gm. of Colchicum Seed. Shake out the alkaloid from the filtrate with chloroform until completely extracted, as shown by testing with iodine T. S., and evaporate the chloroform solution. Add about 1 cc. of alcohol and again evaporate. Repeat this operation once more and dry the residue to constant weight at 100° C. To this weighed residue contained in a flask add 5 cc. of tenth-normal sulphuric acid and 5 cc. of distilled water and heat the mixture for ten minutes at 70° C. Filter the liquid through a pledget of purified cotton, wash the flask and cotton with distilled water, reject the filtrate and washings and remove as much of the water from the cotton as possible. Dissolve any insoluble residue that may remain on the cotton by washing it first with a little alcohol and then with ether; collect the alcohol ether washings in the flask, evaporate, and dry the residue to constant weight at 100° C. Deduct this weight from the weight of residue previously obtained. The difference will be the weight of colchicine obtained from 5 Gm. of Colchicum Seed (Proximate Assay, page —).

Fluidextractum Colchici. *Assay.*—Place 15 cc. of Fluidextract of Colchicum in a 500-cc. flask, containing 275 cc. of distilled water, mix well, add 10 cc. of solution of lead subacetate, and agitate the mixture frequently during one hour. Filter off 200 cc. and proceed as directed under *Colchici Semen*, page —, seventh line of the assay, beginning with the word "Shake."

Tincture Colchici. *Assay.*—Evaporate 150 cc. of Tincture of Colchicum on a water-bath

to about 15 cc., cool, and dissolve the residue in sufficient distilled water to make 290 cc. Add 10 cc. of solution of lead subacetate, and agitate the mixture frequently during one hour. Filter off 200 cc. and proceed as directed under *Colchici Semen*, page —, seventh line of the assay, beginning with the word "Shake."

Hydrastis. *Assay.*—Proceed by Type Process A, taking 10 Gm. of Hydrastis, in fine powder, using 100 cc. of ether and decanting an aliquot portion of 50 cc., representing 5 Gm. of Hydrastis. Use ether for the final extraction and determine the hydrastine gravimetrically (Proximate Assays, page —).

Fluidextractum Hydrastis. *Assay.*—Proceed by Type Process D, taking 5 cc. of Fluidextract of Hydrastis, using ether as the solvent and determine the hydrastine gravimetrically (Proximate Assays, page —).

Hyoscyamus. *Assay.*—Proceed by Type Process B, taking 25 Gm. of Hyoscyamus, in fine powder, using ether-chloroform for percolating the drug and chloroform for the final extraction of the alkaloids. Determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of hyoscyamus (Proximate Assays, page —).

Extractum Hyoscyamus (Pilular). *Assay.*—Proceed by Type Process D, taking 5 Gm. of Extract of Hyoscyamus, using chloroform as the solvent and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of hyoscyamus (Proximate Assays, page —).

Extractum Hyoscyamus (Powdered). *Assay.*—Proceed as directed under *Pilular Extract of Hyoscyamus.*

Fluidextractum Hyoscyamus. *Assay.*—Proceed by Type Process D, taking 25 cc. of Fluidextract of Hyoscyamus, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of hyoscyamus.

Tinctura Hyoscyami. *Assay.*—Proceed by Type Process D, taking 250 cc. of Tincture of Hyoscyamus, evaporating to about 25 cc., using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the total alkaloids of hyoscyamus (Proximate Assays, page —).

Jalapa. *Assay.*—Place 10 Gm. of Jalap in fine powder in a dry flask, add 50 cc. of alcohol and stopper the flask with a perforated cork holding a reflux condenser. (An open glass tube of not less than 0.6 M (2 ft.) in length will suffice.) Place the flask on a water-bath and digest for three hours with occasional shaking. Then transfer to a small percolator, allow to drain and percolate with alcohol until the percolate measures 100 cc. Allow to cool to room temperature and add alcohol to make exactly 100 cc. Mix well.

Transfer 20 cc. of this Tincture, accurately measured, representing 2 Gm. of Jalap to a separator, add 10 cc. of chloroform and 20 cc. of saturated solution of potassium citrate (20 Gm. of potassium citrate dissolved in 12 cc. of distilled water). Shake well during two minutes, then set aside for not less than ten hours or over night. Draw off and discard the lower aqueous liquid and filter the alcohol-chloroform solution through a small filter, wetted with alcohol-chloroform, into a tared flask or beaker. Rinse the separator with a mixture of 10 cc. of alcohol and 5 cc. of chloroform and pass the rinsing through the filter. Mix the chloroformic liquids, evaporate on a water-bath, dry at 100° C. and weigh.

Ipecacuanha. *Assay.*—Proceed by Type Process A, taking 10 Gm. of Ipecac, using 100 cc. of ether and decanting an aliquot portion of 50 cc., representing 5 Gm. of Ipecac. Use ether for the final extraction, make the acid solution of the alkaloids strongly alkaline, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.024 Gm. (Proximate Assays, page —).

Fluidextractum Ipecacuanhæ. *Assay.*—Proceed by Type Process D, taking 5 cc. of Fluidextract of Ipecac, using ether as solvent, make the acid solution of the alkaloids strongly alkaline, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.024 Gm. of the alkaloids of ipecac (Proximate Assays, page —).

Ipomœa. *Assay.*—Proceed as directed under *Jalapa.*

Linimentum Camphoræ. *Assay.*—Place 5 cc. of Liniment of Camphor in a tared, porcelain dish, having a diameter of about 75 mm. and heat it at about 110° C. for ninety minutes, or until

the odor of camphor is no longer discernible. Cool and weigh. The loss in weight is not less than 0.95 Gm. nor more than 1.05 Gm.

Nux Vomica. *Assay.*—Proceed by Type Process A, taking 10 Gm. of Nux Vomica, in fine powder, using 100 cc. of ether-chloroform mixture and decanting an aliquot portion of 50 cc., representing 5 Gm. of Nux Vomica. Use chloroform for the final extraction and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.0364 Gm. of the total alkaloids of nux vomica (Proximate Assays, page —).

Extractum Nucis Vomicæ. *Assay.*—Proceed by Type Process D, taking 1 Gm. of Extract of Nux Vomica, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.0364 Gm. of the alkaloids of nux vomica (Proximate Assays, page —).

Tinctura Nucis Vomicæ. *Assay.*—Proceed by Type Process D, taking 50 cc. of Tincture of Nux Vomica, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.0364 Gm. of the total alkaloids of nux vomica (Proximate Assays, page —).

Opium and Its Preparations.—No change in the U. S. P. IX assays.

Podophyllum. *Assay.*—Proceed as directed under *Jalapa*, page —, using 10 Gm. of Podophyllum in fine powder.

Stramonium. *Assay.*—Proceed by Type Process B, taking 10 Gm. of Stramonium in fine powder, using ether-chloroform mixture for percolating the drug, and chloroform for the final extraction. Determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the total alkaloids of stramonium (Proximate Assays, page —).

Extractum Stramonii (Pilular). *Assay.*—Proceed by Type Process D, taking 2 Gm. of Extract of Stramonium, using chloroform as the solvent and determine the alkaloids volumetrically. Each cc. of tenth-normal acid corresponds to 0.02893 Gm. of the alkaloids of stramonium (Proximate Assays, page —).

Extractum Stramonii (Powdered). *Assay.*—Proceed as directed under *Pilular Extract of Stramonium.*

Tinctura Stramonii. *Assay.*—Proceed by Type Process D, taking 100 cc. of Tincture of Stramonium, using chloroform as the solvent, and determine the alkaloids volumetrically. Each cc. of tenth-normal sulphuric acid corresponds to 0.02893 Gm. of the alkaloids of stramonium (Proximate Assays, page —).

DRUG-MEDICATION OF THE FUTURE.

The following passage occurs in an article in the *New Statesman* of August 9, on "The Science of Medicine," by Dr. Harry Roberts, the well-known medical writer: "Many of us have gone through a stage of sneering at the potentialities of drugs and medicine. It was a healthy stage, but it did not represent the last word. There is every reason to believe that drug-medication has a future which will bear a relation to its past, comparable with that of modern chemistry to the alchemy of the darkest ages. When we contemplate the enormous part which minute quantities of self-manufactured drugs—ferments and hormones and the rest—play in the regulating, modifying and harmonizing work of the body, it is clearly more than plausible that with greater knowledge physicians will be able, as they are just beginning to be able, to produce corresponding modifications by chemical substances introduced from without. At present, the most potent of these substances are derived directly from the bodies of other animals; but, with fuller insight into their nature, and more minute and accurate knowledge of their physical and chemical composition, there is good reason for expecting that before long the creation of all these drugs will be within the capacity of the synthetic chemist."—Through *Pharmaceutical Journal and Pharmacist.*

THE BOYCE-THOMPSON INSTITUTE FOR PLANT RESEARCH OPENS.

There were present about 200 representatives of American universities and scientific institutions at the formal opening of the Boyce-Thompson Institute for plant research in Yonkers, September 24. The speakers of the occasion were Prof. John M. Coulter of the University of Chicago, Dr. William Croker, Yonkers, Prof. Vernon H. Blackman, London, Prof. Louis R. Jones, Madison, Wis., and Dr. Raymond F. Bacon, New York.

UNITED STATES PHARMACOPOEIA.

TENTH REVISION.

ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.*

WHISKY AND BRANDY.

The Pharmacopœial Convention of 1920 recommended that abstracts of changes proposed for the U. S. P. X and new standards and descriptions be published before final adoption, that those who are not members of the Revision Committee may have an opportunity for comment and criticism.

In compliance with this recommendation, the following abstracts are submitted. The nomenclature and the exact wording of the text do not necessarily represent that to be finally adopted and doses have not been appended.

Comments should be sent to the Chairman of the Revision Committee,

E. FULLERTON COOK,
636 South Franklin Square,
Philadelphia, Pa.

SPIRITUS FRUMENTI.

Whisky.

Whisky is an alcoholic liquid obtained by the distillation of the fermented mash of wholly or partly malted cereal grains and containing not less than 47 and not more than 53 per cent. by volume of C_2H_5OH at 15.56° C. It must have been stored in charred wood containers for a period of not less than four years.

Description and physical properties.

A light to deep amber-colored liquid, having a characteristic odor and taste and an acid reaction.

Specific gravity: from 0.935 to 0.923 at 25° C.

Tests for identity and impurities.

The residue obtained by evaporating 20 cc. of Whisky in a dish on a water-bath is not completely soluble in 5 cc. of distilled water. Filter the solution and add to the filtrate a drop of diluted ferric chloride T. S. (1 in 10): a greenish black coloration is produced (indicating storage in wood barrels.)

A 50 cc.-portion of Whisky, diluted with 100 cc. of distilled water, requires for neutralization not less than 3 cc. nor more than 10 cc. of tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator.

Mix 100 cc. of Whisky with 15 cc. of distilled water and slowly distil 100 cc., using an efficient condenser. Neutralize 50 cc. of the distillate with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator, then add exactly 20 cc. more of the tenth-normal sodium hydroxide and boil for one hour under a reflux condenser. Cool and titrate the excess of alkali with tenth-normal sulphuric acid. Run a blank test using distilled water in place of the distillate and make any necessary correction. The volume of tenth-normal sodium hydroxide consumed is not less than 1.7 cc. and not more than 7 cc.

To 5 cc. of the distillate add 2 cc. of sodium hydroxide T. S. and 5 drops of a freshly prepared aqueous solution of sodium nitroprusside (1 in 50), then add a slight excess of acetic acid; no violet tint is produced in one minute (*acetone*).

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J. H. Beal,
801 W. Nevada Street,
Urbana, Illinois.

A mixture of 0.5 cc. of the distillate with 5 cc. of distilled water meets the requirements of the test for Methanol under *Alcohol.**

Acidulate 10 cc. of Whisky with 5 drops of diluted hydrochloric acid and evaporate to 5 cc. Dilute with distilled water to 10 cc. and filter if necessary. The addition of iodine T. S. or mercuric potassium iodide T. S. yields no precipitate (*alkaloids*).

Dilute 10 cc. of Whisky with 2 cc. of distilled water, transfer to a test-tube and shake gently for two minutes with 15 cc. of a mixture of 100 cc. of amyl alcohol, 3 cc. phosphoric acid, and 3 cc. of distilled water, and allow the layers to separate completely: the lower aqueous layer is colorless or very nearly so (*caramel*).

Mix 5 cc. of Whisky with 5 cc. of distilled water and shake the mixture with 10 cc. of purified petroleum benzin. Transfer the separated benzin to a dish of from 70 to 80 cc. capacity, add 1 cc. of sodium hydroxide solution (1 in 10) and evaporate to dryness on a water-bath. Add to the dry residue 2 cc. of sulphuric acid, rotating the acid in the dish so that the residue will be completely moistened. Heat for two minutes on a water-bath, and pour the solution into a dry test-tube containing from 0.03 to 0.05 Gm. of resorcinol. Heat the mixture for three minutes at 160° to 170° C. shaking at intervals to dissolve all of the resorcinol. Then pour the solution into a mixture of 70 cc. of distilled water and 30 cc. of sodium hydroxide solution (1 in 10), adding more sodium hydroxide, if necessary, to make the mixture alkaline. The liquid shows no yellowish green fluorescence after standing twenty-four hours (*diethylphthalate*).

Mix 2 cc. of an aqueous solution of phloroglucinol (1 in 100) with 5 cc. of sodium hydroxide T. S. and add 2 cc. of Whisky: no red color is produced (*formaldehyde*).

Mix 20 cc. of Whisky with 20 cc. of distilled water and shake the mixture with 10 cc. of ether. Allow the mixture to stand until separation takes place, separate the ether layer and allow it to evaporate spontaneously on a watch glass: the residue has no disagreeable or irritating odor.

Evaporate 20 cc. of Whisky in a dish on a water-bath and dry the residue to constant weight at 100° C.: the weight of the residue does not exceed 0.10 Gm. This residue is not sticky, it has a slightly astringent taste but is not distinctly sweet or bitter (*glycerin, sugar, etc.*).

Evaporate 10 cc. of Whisky to 5 cc. and dilute with 10 cc. of distilled water, acidulate with 5 drops of hydrochloric acid and add 10 cc. of hydrogen sulphide T. S.† no precipitate is formed before or after rendering alkaline with ammonia T. S. (*heavy metals*).

Place 2 cc. of mercuric sulphate T. S.† in a test-tube, add 5 drops of Whisky and heat the mixture just to boiling over a small Bunsen burner, and remove it from the flame; no yellow precipitate is formed (*iso-propyl alcohol*).

The addition of an excess of bromine T. S. to 5 cc. of Whisky diluted with an equal volume of distilled water, produces no precipitate (*phenols*).

SPIRITUS VINI VITIS.

Brandy.

Brandy is an alcoholic liquid obtained by the distillation of the fermented juice of sound, ripe grapes and containing not less than 48 and not more than 54 per cent. by volume of C_2H_5OH at 15.56° C.

It must have been stored in wood containers for a period of not less than four years.

Description and Physical properties.

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* Test for Methanol under *Alcohol.*—Dilute the Alcohol with water to contain about 5 per cent. by volume of ethyl alcohol. To 5 cc. of this dilute alcohol contained in a test-tube of 20-cc. capacity, add 0.5 cc. of phosphoric acid and 2 cc. of a 3 per cent. aqueous solution of potassium permanganate, and allow the mixture to stand for ten minutes. Add 1 cc. of an aqueous 10 per cent. solution of oxalic acid, and allow it to stand until the liquid is a transparent brown. Now add 5 cc. of a diluted and cooled sulphuric acid, prepared by mixing 3 volumes of distilled water and 1 volume of sulphuric acid, add 5 cc. of freshly prepared fuchsin-sulphurous acid T. S., mix well, and allow to stand for ten minutes. At the end of this time the solution, when observed against a white background, may have a reddish or pale green color, but not a distinct blue or violet color (*methanol*).

† Mercuric Sulphate T. S. (Denigè's Reagent). Mix 5 Gm. of yellow mercuric oxide with 40 cc. of distilled water, add 20 cc. of sulphuric acid with constant stirring and then add 40 cc. additional distilled water and stir until dissolved.

A pale amber-colored liquid, having a characteristic odor and taste and an acid reaction. Specific gravity: from 0.933 to 0.921 at 25° C.

Tests for identity and impurities.

Evaporate 20 cc. of Brandy on a dish on a water-bath, treat the residue with 5 cc. of distilled water, filter and add to the filtrate a drop of diluted ferric chloride T. S. (1 in 10): a greenish black coloration is produced (indicating storage in wood barrels).

Evaporate 20 cc. of Brandy in a dish on a water-bath and dry the residue to constant weight at 100° C.: the weight of the residue does not exceed 0.30 Gm.

A 50-cc. portion of Brandy, diluted with 100 cc. of distilled water, requires for neutralization not more than 7.5 cc. of tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator (*free acid*).

Dilute 20 cc. of Brandy with 5 cc. of distilled water and slowly distil 20 cc., using an efficient condenser: the distillate meets the requirements of the tests for *acetone* and *methanol* under *Spiritus Frumenti*.

Brandy meets the requirements of the tests for impurities under *Spiritus Frumenti* beginning with the test for "*alkaloids*" but omitting the tests for "*caramel*" and for "*glycerin, sugar etc.*"

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council."—Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The 144th regular meeting of the Chicago Branch of the American Pharmaceutical Association was held Friday evening, October 17, at the School of Pharmacy Bldg., 701 S. Wood St., with President L. E. Warren in the chair. The meeting was devoted to reminiscences of the good times at Buffalo with the following program:

Wm. B. Day—A. Ph. A. Annual Meeting Buffalo.

H. C. Christensen—News from the National Association Boards of Pharmacy.

C. M. Snow—The 25th Annual Meeting of the American Conference of Pharmaceutical Faculties.

L. E. Warren—Scientific Papers at the A. Ph. A. meeting.

E. N. Gathercoal—Pharmaceutical Research, now recognized by the great research organizations of America.

I. A. Becker—Some Pictures from Buffalo (about 30 personally prepared lantern slides).

Professor Day discussed many features of the A. Ph. A. meeting and because of his very intimate knowledge of the business activities as well as the general meetings and the work in the various sections his résumé was of great interest and very illuminating, especially to those who were not privileged to be at Buffalo.

Mr. Christensen spoke of the splendid representation at the general meeting of the National Association Boards of Pharmacy. Thirty-three Boards were represented, the largest number ever represented at an annual meeting of the association; he also stated that during the year, 1,200 reciprocal registrations had passed through the office of the secretary. The committee on examinations had performed a very large amount of excellent work in stabilizing and improving State Board Examinations. Mr. Christensen discussed the National Certificate and stated that while this was endorsed by the boards, further time ought to be given the committee who had it in charge to consider every phase of the matter and to

bring to the nearest possible perfection the plan for establishing a National Certificate in Pharmacy. The younger pharmacists in the audience were much interested in this item.

Mr. Christensen also discussed Dr. Charters' lecture and gave some of the very interesting statistical data that already has been obtained by Dr. Charters' committee which is making a survey of Pharmacy as a profession and business.

PRESCRIPTION INGREDIENTS.

(Quoting from a very recent report of the Committee.)

In 17,577 prescriptions studied, the ingredients used were:

A.	Chemicals	
	Organic	11,414
	Inorganic	7,694
B.	Galenicals	
	Tinctures, sirups, elixirs fluidextracts, etc.	15,235
C.	Drugs	559
D.	Proprietary	4,461
E.	Animal	517

It will be noted that proprietaries are not nearly as numerous as commonly supposed, and that chemistry, pharmacology, etc., are absolutely essential for prescription work.

Toxicology—926 stores were studied and 315 or 34% reported at least one case where the pharmacist had been called upon to use his knowledge of toxicology in diagnosis and treatment of poisoning. 123 different poisons were found to have been encountered with phenol, iodine and mercuric chloride heading the list.

First Aid—was rendered in 2,811 cases in which epilepsy, hemorrhages, accident cases, fainting, burns, etc., were reported.

Crude Drugs—911 stores were studied, and 255 different drugs were found which were likely to be sold from broken packages; no small knowledge of materia medica and identification required here.

Prof. C. M. Snow presented a number of interesting features that he had observed at Buffalo. He mentioned particularly the very valuable work accomplished during the two-days' meetings of the recently organized Pharmaceutical Seminar. Pharmaceutical teachers from many colleges were present and a total of six meetings were held. The Seminar is to meet again next year and much good is expected to ensue from these meetings in which teaching methods and laboratory experiences are discussed.

President L. E. Warren mentioned the large number of papers that were read before the scientific section as well as before the section on Practical Pharmacy. He expressed regret over the fact that research workers who had formerly appeared before the Scientific Section, A. Ph. A. now read their papers before the scientific section of the American Drug Manufacturers' Association. However, a total of 41 papers for the Scientific Section does represent a great deal of research and a large addition to pharmaceutical knowledge. He discussed the salient features of quite a number of the more important papers.

Prof. E. N. Gathercoal gave a short history of the National Research Council and illustrated with a chart the relationships of Pharmacy to this great scientific research organization of America. He pointed out how Pharmacy now had three contacts with this organization—one by the Committee on Chemical Research on Medicinal Substances—one by the Committee on Pharmacognosy and Pharmaceutical Botany, and one by the Committee on Pharmacopœias. He also presented the history of the National Conference of Pharmaceutical Research of which Dr. Arny is the father. This conference which holds an all-day annual meeting on the Saturday preceding the week of the A. Ph. A. annual meeting was represented by delegates from ten pharmaceutical organizations interested in research work. Attention was also called to other committees interested in pharmaceutical research and to the recently published list of twenty-nine research workers in Pharmaceutical Colleges all of whom are preparing for higher degrees.

Mr. Becker presented some thirty lantern slides prepared from kodak pictures taken at Buffalo and Niagara Falls. These were much appreciated by the audience.

E. N. GATHERCOAL, *Secretary.*

UNIVERSITY OF NORTH CAROLINA.

The first meeting of the University of North Carolina Branch of the A. Ph. A. for the year 1924–25 was held in Davie Hall on the evening of October 9. A large number of members and visitors was present. The new students are manifesting great interest in the branch and several have already affiliated with the organization.

Officers for the year were installed at this meeting. Due to the failure of J. A. Meacham,

who was elected President last spring, to return to college, J. L. Thompson, the first Vice-President, was installed as President, and Edward Haupt, the second Vice-President, was made first Vice-President. The other officers are J. M. Spoon, of Charlotte, Secretary-Treasurer; and Dean E. V. Howell, historian.

President Thompson appointed the following committees for the year; Division chairmen on membership: W. L. West, T. J. Moore and H. M. Deal. Program committee: E. H. Tate, Chairman; E. V. Kyser, O. D. Biddy and A. B. Kunkle.

The members voted to hold bi-monthly meetings instead of one a month as heretofore. One of these meetings will be devoted to the reading of papers written by members of the branch, and to abstracts from interesting subjects pertaining to pharmacy. At the other meeting lectures will be given by speakers from leading pharmaceutical and chemical houses.

After the routine business was disposed of Prof. E. V. Kyser gave a very interesting and instructive lecture on the "Synthesis of Flowers." He demonstrated by the use of slides how perfumes are made from flowers and also showed the process of production of perfumes synthetically. The branch is greatly indebted to Charles V. Sparhawk, of Newark, N. J., for lending the slides for this lecture.

Reported by E. V. KYSER.

NEW YORK.

The October 1924 meeting of the New York Branch of the American Pharmaceutical Association was called to order in the Lecture Hall of the New York College of Pharmacy Bldg., on Monday the 15th at 8:30 o'clock, President Smith in the chair.

Seventeen members and friends were present.

It was moved, seconded and carried that the reading of the minutes of the preceding meeting be dispensed with.

Treasurer's Report.—Treasurer R. R. Gerstner brought in a report which showed a balance of $358.69 in the treasury.

Membership Committee.—The following application was received for membership in the Parent Organization: George E. Milliman, 130 So. 6th Ave., Mt. Vernon, N. Y.

Legislation and Education.—In the absence of Chairman Clyde L. Eddy, no report was received.

Fraternal Relations.—Chairman Lehman reported progress.

Audit Committee.—Dr. Diner reported that there were no bills before him at this time.

SCIENTIFIC SECTION.

Dr. Diekman now read a number of interesting abstracts on the following:

New alkaloidal reagent
Determination of urea in urine
Various formulae
Non-inflammable cleaning fluid
Tests for purity of ether.

Reports of delegates to various conventions held during the summer were now called for.

Dr. H. V. Arny reported the A. Ph. A. Convention held at Buffalo; Robert S. Lehman the New York State Convention; Dr. R. P. Fischelis reported on the New Jersey Convention.

A written report of the Connecticut Convention sent in by Dr. C. P. Wimmer was read by the Secretary.

After a rising vote of thanks to the speakers the meeting was declared adjourned.

HUGO H. SCHAEFER, *Secretary.*

PHILADELPHIA.

The opening meeting of the year for the Philadelphia Branch of the American Pharmaceutical Association was held at the Engineers' Club, 1317 Spruce Street, on Tuesday, October 14th, 1924.

Previous to the meeting about thirty of the branch members joined in a dinner at the club, given in honor of Dr. Frank E. Stewart, who recently returned from a trip abroad. Dr. Stewart presented a most interesting story of his journey and showed many pictures and articles of interest which he had collected along the way.

The meeting itself was called to order by President Harrisson at 8:30 o'clock. The Secretary read the minutes of the previous meeting and the following thirty-two applicants to the Parent body were elected to membership in the branch: G. Hornik, D. W. Gundrum, T. H. Wood, Herman Evans, D. Klebanoff, Miss M. L. Herbst, E. T. Jones, S. H. Kerlin, A. E. Moorer, P. J. Tomlin, A. O. Courtney, J. E. Search, I. A. Mullen, G. N. Malpass, J. B. Merrick, I. M. Ortiz, J. E. Frankfurt, P. B. Clarke, M. B. Friedman, P. T. Albanese, J. J. Welsh, S. Cohn, H. W. Bond, T. H. Ringer, E. M. Wilson, C. S. Troxell, H. W. Stoneback, J. F. Belsterling, Thos. E. Rees, R A. Goodrich, E. Bird, E. D. Michner.

A short motion picture of our country's

national roads was then shown. This reel had no particular significance to Pharmacy but was simply given as a matter of added interest. It presented many scenes of our own beautiful land and its natural beauties, as found and observed from our national highways.

While the reel was being changed for the feature of the program, Dr. Stewart presented the notes of pharmaceutical interest which he had gathered on his trip. His remarks were quite interesting and were discussed by Messrs. Hunsberger, Cook, Viehoever, Kraus and others.

The main feature of the evening's program was a motion picture obtained through the U. S. Bureau of Mines at Pittsburgh, and entitled "Unhooking the Hook Worm." It presented the story of this southern malady quite vividly, carrying it through its various stages, from the time of its general distribution, through lack of improper sanitation, until it enters the pores of the body, makes its way through the various channels and finally lodges in the bowel, where it sets about to do its dreadful work. Its effect on the victim was very strikingly shown and finally the treatment for the cure of the disease and measures required to stop its spreading, through proper sanitation and care in general health, were fully demonstrated.

Dr. Hotatio C. Wood, Jr., led an informal discussion on the subject, at the close of the picture, and added many points of extreme interest. One particular point that Dr. Wood brought out was the fact that this film was obtained through a private research institute and that practically all work being done along this line, where human beings were involved, was being done by private institutions. The Government, on the other hand, directed its attention and its finances, not to the saving of its people, but to the saving of its cattle, cotton, and forestry products.

ADLEY B. NICHOLS, *Secretary.*

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION 1924–1925.

Office of the Secretary, 192 Roseville Ave., Newark, N. J.

LETTER NO. 1.

To the Members of the Council: October 7, 1924.

1. The full membership of the Council of the American Pharmaceutical Association for the fiscal year 1924–25 is as follows:

ELECTED MEMBERS.

James H. Beal, Chairman, Urbana, Ill., Term expires 1926.

Samuel L. Hilton, Vice-Chairman, 1033—22nd St., N. W., Washington, D. C., Term expires 1925.

Robert P. Fischelis, Secretary, 509 High St., Newark, N. J., Term expires 1926.

Wilbur L. Scoville, P. O. Box 488, Detroit, Mich., Term expires 1925.

Charles E. Caspari, 2108 Locust St., St. Louis, Mo., Term expires 1925.

C. H. LaWall, 636 Franklin Square, Philadelphia, Pa., Term expires 1926.

H. V. Arny, 115 W. 68th St., New York City, Term expires 1927.

H. M. Whelpley, 2342 Albion Place, St. Louis, Mo., Term expires 1927.

A. G. DuMez, 25th & E. Sts., Washington, D. C., Term expires 1927.

EX-OFFICIO MEMBERS.

C. W. Holton, President, A. Ph. A. 783 Broad St., Newark, N. J.

P. S. Pittenger, 1st Vice-President, A. Ph. A., Broad & Wallace Sts., Philadelphia, Pa.

Wm. Mansfield, 2nd Vice-President, A. Ph. A., P. O. Box 137, Delmar, N. Y.

Wm. B. Day, Secretary, A. Ph. A., 701 So. Wood St., Chicago, Ill.

E. F. Kelly, Treasurer, A. Ph. A., Lombard & Greene Sts., Baltimore, Md.

E. G. Eberle, Editor, JOURNAL A. PH. A., 253 Bourse Bldg., Phila., Pa.

A. G. DuMez, Editor, YEAR BOOK, A. PH. A., 25th & E. Sts., Washington D. C.

W. B. Philip, Chairman, House of Delegates, A. Ph. A., 593 Market St., San Francisco, Calif.

The officers of the Council for the present Association year are indicated at the top of the list.

2. Minutes of the meetings of the Board of Directors and the Council held before, during and after the Convention of the American Pharmaceutical Association at Buffalo.—See pp. 844–870, September JOURNAL A. PH. A. See list of members elected and by subscription to Headquarters, pp. 866–869.

(*Motion No. 1.*) *It is moved by Fischelis that the minutes be approved as presented herewith.* For benefit of the new members of the Council it is pointed out that motions made by mail during the interim between meetings of the Council require no second. The Secretary will be pleased to have his attention called to errors and necessary alterations or corrections.

2. Prof. Scoville Desires to Withdraw as Candidate for A. Ph. A. Presidency. In a letter dated September 11, Prof. W. L. Scoville, one of the three members nominated for president at the Buffalo meeting of the A. Ph. A., earnestly requests that his name be withdrawn from the ballot because the pressure of National Formulary work will be so great during the coming year as to occupy the major portion of his time. The members of the Council are well acquainted with the great service Prof. Scoville is rendering the Association and pharmacy at large, as Chairman of the N. F. Revision Committee and will doubtless regret his desire to withdraw although realizing fully the weight of his argument. Prof. Scoville makes the following requests: (*a*) That the Council permit the withdrawal of his name from the ballot, (*b*) That if the Council does not see fit to withdraw his name from the ballot, he be permitted to have a prepared statement enclosed with each ballot sent out by the Secretary, to the effect that he desires his name to be eliminated in the balloting and giving the reason for his request.

(*Motion No. 2.*) *It is moved by Holton, that Professor Scoville's withdrawal as a candidate for the presidency of the A. Ph. A. be accepted and that the Secretary of the A. Ph. A. be authorized to note the fact of Professor Scoville's withdrawal on the official ballot.*

3. Publicity for Address of Chairman of Dispensing Section. The following communication has been received from P. Henry Utech, Meadville, Pa.:

"At the Buffalo Meeting, in the Practical Pharmacy and Dispensing Section, a resolution was passed that the address of Chairman Ruth be referred to the Council with the recommendation that it be given wider publicity. Whether this implies more than publication, in the JOURNAL, I do not know.

"The address of Chairman Ruth, which showed very careful preparation, outlined quite a number of problems of vital concern to pharmacy and pharmacists, together with some very rational arguments for bringing about a better and more wholesome condition within the ranks of pharmacy proper. Among other subjects, emphatic endorsement was given the Headquarters' Building proposition.

"In conference with Professor Newcomb he expressed a willingness to circularize 10,000 copies of the address along with his campaign literature. I am writing you, therefore, in the hope that some definite action be taken by the Council towards securing these additional reprints for publicity purposes."

P. HENRY UTECH.

(*Motion No. 3.*) *It is moved by Arny that the Editor of the Journal of the A. Ph. A. send galley proofs of Chairman Ruth's address to such pharmaceutical journals as may desire them and that Dr. Newcomb be authorized to obtain reprints of the article for distribution with headquarters campaign literature if it is deemed advisable.*

The motion is open for discussion. A vote will be called for later.

4. Certificate for Ebert Prize. The following communication from P. S. Pittenger to Chairman Beal has been referred to the Council for action.

"Last year when I had the honor of being the recipient of the Ebert prize at the Asheville Meeting, I was asked by at least 8 or 10 members of the Association as to whether the prize was accompanied with a certificate or medal of some sort showing to whom the prize was awarded.

"When explained that no such certificate or medal was awarded and that the prize consisted of a check representing the interest on a certain sum of money, in every instance the member expressed the opinion that in view of the great honor which the prize carried with it, he would much prefer a certificate or medal to the actual cash.

"During the past year I have been looking for some good use to which I could put my Ebert Prize money.

"I have given rather serious thought to the remarks of these members and have decided, if it meets with the approval of the Council, to give the Ebert Prize money and

any additional amount necessary, to purchase a plate for a certificate to accompany the Ebert Prize check.

"It is my idea to donate such a plate to the Association, together with a sufficient number of certificates to present one to all of the living Ebert Prize winners.

"As I am Chairman of the Scientific Section for next year and the Ebert prize is awarded by a Committee of the Scientific Section, I would like to have as part of a special feature of the Scientific program next year, the presentation of these certificates.

"The plate will then be turned over to the Association in order that similar certificates may accompany the check when the prize is awarded.

"I realize there may be complications which would make it impractical to carry this plan out.

"I am therefore writing for the Council's opinion in order that I will know how to make my plans for sessions of next year's Scientific Section.

"Enclosed herewith is a rough sketch of the wording which I would suggest for such a certificate.

Very truly yours,

PAUL S. PITTENGER."

AMERICAN PHARMACEUTICAL ASSOCIATION.

This is to certify that

H. V. ARNY, Ph.G., Phar.D.

has been awarded the

EBERT PRIZE

for the year 1923.

The Ebert Prize is awarded to the author of the best essay or written contribution, presented at the annual convention of the A. Ph. A. containing an ORIGINAL INVESTIGATION of a medicinal substance, determining new properties, or containing other meritorious contributions to knowledge; or for IMPROVED METHODS of determining merit, for the preparation of chemical or pharmacal products.

President.

Comments and motions are in order.

5. *Applicants for membership:* No. 2, John R. West, Jr., Tarpon Springs, Fla.; No. 3, Alexander E. Braff, 151 Livingston St., N. Y. C.; No. 4, Hugh Sellers, 120 S. Perry St., Montgomery, Ala.; No. 5, Sister Mary Loretto, 4th & Reservoir Ave., Milwaukee, Wis.; No. 6, Bernard E. Frommack, Lewis, Iowa; No. 7, Conrad L. Wareham, Dysart, Ia.; No. 8, Cecil Mendelson, 112 F. Saybrook Apts., Craft Ave., Pittsburgh, Pa.; No. 9, Harootune K. Markarian, 247 Jewett St., Providence, R. I.; No. 10, Richard W. Blanding, 54 Weybosset St., Providence, R. I.; No. 11, Harry R. Cameron, Port Deposit, Md.; No. 12, Antone Nickelsen, 435 Stanton St., Portland, Ore.; No. 13, Richard Homer Andrews, Burlington, N. C.; No. 14, Walker M. K. Bender, Chapel Hill, N. C.; No. 15, Melick West Blades, Elizabeth City, N. C.; No. 16, Harland M. Deal, Chapel Hill, N. C.; No. 17, Rachael P. Fowler, Roseboro, N. C.; No. 18, Wm. L. Harper, Chapel Hill, N. C.; No. 19, Thil E. Smith, Wilsons Mills, N. C.; No. 20, Earl Henry Tate, U. N. C., Box 267, Chapel Hill, N. C.; No. 21, Richard Watson, Tryon, N. C.; No. 22, Paul R. Hudson, 3131 Washington Blvd., Cleveland Hgts., Ohio; No. 23, David Klamsch, 3534 W. 13th Place, Chicago, Ill.

(*Motion No. 4.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

6. *Applicants for membership who have contributed to Building Fund.* The following non-members of the A. Ph. A. have pledged a total of $25 or more to the building fund and have made a cash payment of $5 or more. They are therefore entitled to membership in the A. Ph. A. H-1, Louis J. Pelikan, 2359 S. Kedzie Ave., Chicago, Ill.; H-2, Russell Madows, Douglas, Ariz.; H-3, Aziel Guy Crouch 525—10th St., Douglas, Ariz.; H-4, James L. Franken, 22 N. Wolcott Ave., Salt Lake City; H-5, Anthony J. Miller, Jr., 222 Main St., West, Rochester, N. Y.; H-6, Henry J. Bowerfind, 127–131 W. Wayne St., Ft. Wayne, Ind.; H-7, C. D. Smith, Grand Junction, Colo.; H-8, G. Ralph Harriman, 100 E. Main St., Visalia, Calif.; H-9, Albert P. Sy, 219 Crescent Ave., Buffalo, N. Y.; H-10, Homan M. Daniel, Corinth, Miss.; H-11, Carl C. Renneckar, Ridge & Lake Ave., Gross Point, Ill.; H-12, John B. Matheke, 481 Central Ave., East Orange, N. J.; H-13, Conrad L. Martin, 506 So. Greenwood Ave., Kankakee, Ill.; H-14, Henry E. Freytag, 331 Main St. E., Orange, N. J.; H-15, Chas Frederick Wright, 50–54 Causeway, Boston, Mass.; H-16, Emile J. Ouellet, 756 Washington St., Stoughton, Mass.; H-17, Samuel Schwarz, 887 Broad St., Newark,

N. J.; H-18, Otto F. Kramer, 301 Main St., Vincennes, Ind.; H-19, John M. James, c/o Palace Drug Co., Pueblo, Colo.; H-20, Thos. N. Edwards, 200 E. Traae St., Charlotte, N. C.; H-21, J. W. Slocum, 404 West Ashland Ave., Indianola, Ia.; H-22, Emil T. Schmidt, Buffalo, Minn.; H-23, J. French Simpson, 7th Rd. Ave. & R Sts. N. W., Wash., D. C.; H-24, Achor B. Campbell, 129 Seaver St., Stoughton, Mass.; H-25, W. A. Wishart, Kahn Bldg., 15th & Broadway, Oakland, Calif.; H-26, Chas E. Clute, Murdo, So. Dak.; H-27, P. A. Hains, Garrison & Liberty Heights Ave., Baltimore, Md.; H-28, Don C. Westerfield, 25 E. Second St., Dayton, Ohio; H-29, Chas F. Becton, 3301 W. 23rd Ave., Denver, Colo.; H-30, James F. O'Connell, 242 Western Ave., Allston, Mass.; H-31, Maurice W. Corbin, 221 Main St., Worcester, Mass.; H-32, Frank K. Kitzmiller, 1325 Derry St., Harrisburg, Pa.; H-33, Henry DeWyl, 225 E. High St., Jefferson City Mo.; H-34, John D. Lynch, 2406 Mass Ave., Cambridge, Mass.; H-35, Wm. A. Warford, 3517 W. 11th St., Little Rock, Ark.; H-36, Arnold C. Kreis, 2301 Versailles Ave., McKeesport, Pa.; H-37, Chas G. Patterson, 1027 Main St., Lynchburg, Va.; H-38, Stephen L. Wood, 35 South St., Freehold, N. J.; H-39, Walter R. Stewart, 574 Rice St., St. Paul, Minn.; H-40, Jacob Waldman, Hyattsville, Md.; H-41, Geo M. Schmidt, 1120 So. East Ave., Baltimore, Md.; H-42, Wm. C. McGonagle, Kamehameha & Beckwith St., Honolulu, T. H.; H-43, Hyman Davidov, Royal Court Apts. Lake Drive & Callow Ave., Baltimore, Md.; H-44, Harry E. Huffman, 1050 W. Colfax St., Denver, Colo.; H-45, Frank J. Hoffman, 117 Brownsville Rd., Mt. Oliver, Pa.; H-46, Ralph Rapp, 107 So. 3rd St., Easton, Pa.; H-47, Frank S. Kimball, No. Dakota Agri. College, Fargo, N. D.; H-48, John S. Richardson, 1 No. Main St., Bel Air, Md.; H-49, Julius Ringhofer, 414 Elgin Ave., Forest Park, Ill.; H-50, Philip H. Boise, 1131—14th St. No., Fargo, N. Dak.; H-51, James L. Dow, 181 Main St., Lancaster, N. H.; H-52, Smith W. Gordon, Lake Charles, La.; H-53, Max I. Barth, 110 E. 42nd St., N. Y. C.; H-54, Joseph T. Sperl, 226 So. Hoyne Ave., Chicago, Ill.; H-55, Edward A. Powers, 1601 Union Ave., Baltimore, Md.; H-56, A. B. Davidson, 508 Market St., Colusa, Calif.; H-57, Forrest C. Flora, 614 E. 1st St., Aberdeen, Washington; H-58, Philip J. Boeming, 637 Hanover St., Baltimore, Md.; H-59, Frank E. Horak, 100 3rd Ave., Cedar Rapids, Ia.; H-60, Earl L. Laiker, Swanville, Minn.; H-61, Nathan F. Jones, 101 E. 5th St., Canton, S. Dak.; H-62, Samuel R. Horne, 124 Hay St., Fayetteville, N. C.; H-63, James J. Klavon, 2849 Penn Ave., Pittsburgh, Pa.; H-64, Leon Smith, Kannapolis, N. C.; H-65, Wm. Scott Zepp, Rolling Rd., Catonsville, Md.; H-66, Jacob A. Boos, Mount Vernon, N. Y.; H-67, J. Ira Klinger, 201 S. Main St., Lima, Ohio; H-68, Benj. A. Cramer, 67 East Ave., Rochester, N. Y.; H-69, James B. Kaleta, 1031 Hudson Ave., Rochester, N. Y.; H-70, Frank L. Black, 2839 W. North Ave., Baltimore, Md.; H-71, Wm. C. Gerdin, 2638 Anthony Blvd., Ft. Wayne, Ind.; H-72, Clarence M. Isenburg, Shelley, Idaho; H-73, Nelson Edw. Fletcher, Main & Elizabeth Sts., Peoria, Ill.

(*Motion No. 5.*) *Vote on applications of contributors to building fund, for membership in the American Pharmaceutical Association.*

ROBERT P. FISCHELIS, *Secretary.*

THE RED CROSS AND CHRISTMAS SEAL SALE.

Aid in behalf of the Red Cross and providing means for preventing and controlling the dread malady and caring for the afflicted are subjects to which it seems unnecessary to direct the attention of pharmacists. No class is better informed nor more willing to contribute thereto—pharmacies are always headquarters in such movements. The Red Cross membership for 1925 will be enrolled November 11–25; the Christmas seals will be on sale during December. Those who help in the former encourage a practical application of the ideals of mercy; those who help in the seventeenth annual Christmas seal sale perpetuate the memory of one who helped to bring "cure sometimes, relief often and comfort always" to thousands of disheartened sick persons. Let us see that every one has the opportunity to share in this work. There is another opportunity of aiding in a worthy cause, namely, on December 7 (Golden Rule Sunday), when collections will be made for the children of the Near East; many of these have no shelter and will perish from hunger and cold unless liberal support is given to the Near East Relief Organization. By united action 3 one-dollar contributions will make many donors happy and bring comfort and relief to a relative number.

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN BUFFALO, N. Y., AUGUST 25–29, 1924.*

SCIENTIFIC SECTION.

The first session of the Scientific Section, A. Ph. A., was convened at 9:00 A.M., August 27, by Chairman J. P. Snyder. Vice-Chairman F. F. Berg presided during the reading of the Chairman's address.

CHAIRMAN'S ADDRESS.

In welcoming you to the first session of the Scientific Section it is indeed gratifying to your chairman and other officers to report the interest that has been shown in our Section during the last year. The response to our request for papers has been in excess of our anticipations and it is our firm belief that they are well up to the high standard that has been set in previous years, and we feel that each of you who attends our meeting will be able to go away fortified with information which will be of immense value in your future work.

In preparing our program for this meeting, in view of the large number of papers that have been received, your officers have thought it advisable this year to discontinue lectures from our program, in order that the meetings may be entirely devoted to papers. While, in a way, your officers regret taking this step, as many of us have oftentimes expressed our pleasure in being able to be present and listen to many instructive illustrated lectures in the past, we feel that an individual who takes the trouble to give the thought and time necessary to prepare a paper upon a scientific subject and, perhaps to make a distant trip to the convention for the expressed purpose of reading this paper should, in justice to the author, be given at least ten minutes to present his subject and have it discussed. Therefore, your officers have agreed to offer such an opportunity this year and we trust that it will meet with your approval.

REVISION OF THE BY-LAWS OF THE SCIENTIFIC SECTION.

Perhaps the work of a general nature of the greatest interest to the members of the Section is the proposed changes in the By-Laws of the Section. Early in the year your Chairman received a notice from Secretary William B. Day that the reorganization plan of the Association, which had been adopted at the Assheille meeting, made a revision of the By-Laws of our Section necessary and directed that this work be carried out.

Accordingly, a committee consisting of Drs. H. V. Arny, Paul S. Pittenger and your Chairman met in New York City last April and, after considerable discussion, drew up a revision which will later be submitted by the Secretary for your approval. Perhaps it would not be amiss at this time to call your attention to certain specific changes which we recommend as desirable.

SECTION IV—ARTICLE I.—The present By-Laws of the Section provide that the chairman, at the first meeting, appoint a committee on nominations which shall at the last meeting of the Section report two names for each office. The Committee now proposes that this be changed to one name for each office and, as heretofore, any member has the right to nominate from the floor. Under the procedure in the past the committee on nominations has usually reported one set of nominees as the first choice of the committee and another to comply with the By-Laws. This in some instances, undoubtedly, has worked an injustice, as it always records officially that certain individuals had been defeated and, perhaps, this might be the means of breaking the spirit of some young defeated candidate and act as a brake upon his future activities in the Section.

MEETINGS.

In view of our decision this year to discontinue lectures from meetings of the Section we would specifically call attention to SECTION IV, ARTICLE II, which provides for such lectures.—

* See also p. 964, October JOUR. A. PH. A.

"Special sessions may be held at the discretion of the officers for the purpose of permitting lectures which would require more time than allowed in SECTION IX, ARTICLE III. These special sessions may be held simultaneously with the regular meeting of the Section."

Again we believe that the joint meetings held last year of this Section with the Section on Practical Pharmacy served a most useful purpose and the proposed By-Laws carry a provision to make this possible at all future meetings of the Association.

IN MEMORIAM.

In passing I cannot refrain from calling to your attention the great loss which our Association and, particularly, our Section has suffered in the deaths of Prof. E. L. Patch and of Dr. J. M. Francis. Professor Patch, a former chairman of this Section, after a long and useful labor in and for Pharmacy, passed along to the great beyond. His lovable disposition endeared him to all with whom he came in contact and in his death the American Pharmaceutical Association, our Scientific Section and, in fact, all Pharmacy loses one of its best and most devoted members.

The life of Dr. John M. Francis stands to-day as an example to all young men entering the field of Pharmacy of what can be accomplished by hard and diligent work. In his younger days, Dr. Francis was handicapped by ill health and a frail constitution but, in spite of all this and by always striving to do his work just a little better than anybody had done it before, he eventually succeeded to a position which commanded the respect of all.

A friend to John Francis was more than a speaking acquaintance; friendship once having been established his greatest pleasure was to go out of the way to do some kindly act to further cement this friendship.

From his vast knowledge of things pharmaceutical he gave freely and unstintingly. He was a leader in the fullest sense of the word and as such his untimely death leaves a position hard to fill, and as a dear sacrificing friend he will long be remembered.

RECOMMENDATIONS.

Specifically, I would make the following recommendations:

First. That the incoming officers of the Section give special attention to compiling a list of the names of those who are active in our Section. The present list is far from complete and the names of those who desire to be considered as members of this Section should be recorded, as provided for in the By-Laws.

Second. That the records of the Secretary be preserved and passed along to the incoming Secretary so that the incoming officers have the benefit of past experience and recommendations.

Third. That each year the incoming Chairman and Secretary be provided with complete copy of the By-Laws of the Section together with any amendments that may be hereafter made and which will serve them as a guide in outlining their program for the year.

Fourth. I would recommend that each member of this Section take an active part in the Research Conference and promptly forward to the Secretary of the Conference a report of any research that has been completed, contemplated or is being carried on. By so doing they will tend to lighten the work of the officers of the Conference and at the same time assure future generations a record of their work.

In closing I wish to personally extend the thanks of the officers of the Section to those of you who have contributed papers this year; to them, particularly, belongs any credit which may be given for a successful meeting. To the officers of the Section and to our President, Dr. H. V. Arny, I extend my thanks for help and coöperation during the year; particularly, to Dr. Paul S. Pittenger, our secretary, for his untiring efforts in attending to detail which goes a long way toward making a successful meeting.

Heber W. Youngken moved, Robert J. Ruth seconded the motion, that the address be referred to a committee of three members.—Carried.

Acting Chairman F. F. Berg appointed Messrs. Robert J. Ruth, E. F. Kelly and A. G. DuMez.

Secretary Paul S. Pittenger made a verbal report of some of his activities during the year—250 personal letters for papers had been sent out; letters were sent to pharmaceutical publications to publish the appeal, and with splendid results; a follow-up letter was mailed to those who had

not responded; the Secretary has added to the list of prospects for papers and the enlarged list will be given over to his successor; 38 papers were received.

Chairman J. P. Snyder appointed Messrs. F. E. Bibbins and Hermann Engelhardt as a Committee on Nominations.

Consideration of By-Laws was next in order. These were read by Secretary Pittenger, article by article, and acted upon as read; at the conclusion of the discussion, F. W. Nitardy moved that the By-Laws, as amended, be approved as a whole; motion seconded by Robert J. Ruth.—Carried.

Discussion on the By-Laws was participated in by Messrs. Viehoever, Ruth, Nitardy, Scoville, Snyder, Pittenger, Clark and others. The By-Laws as amended and adopted by unanimous vote follow:

BY-LAWS OF THE SCIENTIFIC SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

SECTION I.

Name.

ARTICLE I. This organization shall be known as the Scientific Section of the American Pharmaceutical Association.

SECTION II.

Membership.

ARTICLE I. All members of the American Pharmaceutical Association in good standing, who express a desire to do so, by registering their names with the Secretary of the Section, shall become members of the Section.

SECTION III.

Officers.

ARTICLE I. The officers of the Section shall be a Chairman, a First Vice-Chairman, a Second Vice-Chairman, a Secretary, and a Delegate to the House of Delegates, selected from members of the Section.

SECTION IV.

Election of Officers.

ARTICLE I. The Chairman of the Section shall at the first session appoint a committee of three, who shall report to the Section at the last session one name for each office, selected from the members of this Section; in addition, any member has the privilege of making further nominations from the floor of the meeting. At the final session of the Section all names placed in nomination shall be balloted upon. The one receiving a majority for that particular office shall be declared elected. These shall then be installed and shall hold office for one year or until their successors are duly elected.

ARTICLE II. Officers may be reëlected, but with the exception of the Secretary shall not hold the same office for more than two consecutive years.

ARTICLE III. The Council of the Association shall fill any vacancies that may occur among the officers.

SECTION V.

Duties of Officers.

Chairman and Vice-Chairman.

ARTICLE I. It shall be the duty of the Chairman to preside at all meetings of the Section, appoint all committees of the Section and fill any vacancies when occurring in these committees. He may present an annual address on any subject of interest to the Section that he may deem of sufficient importance.

ARTICLE II. In the absence of the Chairman, the First Vice-Chairman shall preside and exercise all the functions of the Chairman.

ARTICLE III. In the absence of the Chairman and the First Vice-Chairman the Second Vice-Chairman shall preside and exercise all the functions of the Chairman.

ARTICLE IV. In the absence of all three of these officers the Section shall elect a temporary Chairman.

Secretary.

ARTICLE V. The Secretary shall keep a record of the proceedings of the Section, and shall transmit current records to the incoming Secretary of the Section and records of permanent value to the Historian of the Association. He shall send to the members such notice as the business of the Section may require, shall transmit to the House of Delegates the names of the officers elected and the committees appointed, as well as any changes in the personnel of the committees. He shall furnish the House of Delegates a report of the sessions held at the annual meeting. The Secretary, at least two months in advance, shall write to each member of this Section, giving notice of the latest date upon which papers can be accepted for the program.

ARTICLE VI. The Secretary shall be custodian of the records and documents of the Section, and shall transmit records to the incoming secretary of the Section and records of permanent value to the Historian of the Association.

ARTICLE VII. The Secretary shall furnish the Editor of the Journal of the Association the program for inclusion in the number just preceding the annual meeting.

ARTICLE VIII. The Secretary shall at each annual meeting present a brief report to the Association of the condition within the Section.

ARTICLE IX. In case the Secretary is unable to attend the annual meeting, he shall notify the Council to that effect and the Council shall then appoint a temporary Secretary.

SECTION VI.

Meetings.

ARTICLE I. At least three sessions of the Section shall be held at each annual meeting of the Association. Additional sessions may be held at any time during the meeting when the officers of the Section may see fit, and by consent of the Council; provided, however, that these sessions shall be so arranged that they will conflict as little as possible with sessions of other Sections, and that no session be held simultaneously with the general sessions of the Association or the House of Delegates.

ARTICLE II. Special sessions may be held at the discretion of the officers for the purpose of permitting lectures which will require more time than allowed in Section IX, Article III. These special sessions may be held simultaneously with the regular meetings of this section.

ARTICLE III. Joint sessions of this Section with other Sections may be held, due arrangements having been made by the officers.

SECTION VII.

Order of Business.

ARTICLE I. The order of business at the first session shall be as follows: (1) Call to Order; (2) Chairman's Address; (3) Secretary's Report; (4) Reports of Standing Committees and Committees of the Association which report to this Section; (5) Appointment Committee on Nominations; (6) Miscellaneous Business; (7) Reading of Papers.

ARTICLE II. The time of the other sessions shall be taken up with the reading of papers, excepting as provided for in Section IV (Election of Officers) and Section X (Amendments), or to hear the reports of special committees.

ARTICLE III. Provided, however, that discussion of papers may be interrupted at any time to consider matters referred to the Section by the Association in general session or by the Council or by the House of Delegates.

ARTICLE IV. This regular order of business may be suspended at any time during a session, for that particular session, by a three-fourths vote of those present.

SECTION VIII.

Expenses.

ARTICLE I. The expense of printing, postage and stationery shall be paid from the Association treasury, but in no case to exceed $25.00 for one year.

ARTICLE II. Appropriations for expenses other than those named here must be procured by authority of Council through the Chairman of the Section.

SECTION IX.

Papers.

ARTICLE I. Original papers on any subject of scientific interest may be accepted at the discretion of the officers of the Section.

ARTICLE II. The complete title and a brief abstract of all papers, not to exceed 250 words, must be in the hands of the Secretary in time for inclusion in the program, which is published as provided in Section V, Article VII.

ARTICLE III. Ten minutes shall be allowed for the reading of a paper. If the paper is too lengthy to be read in detail within this space of time, it shall be presented in abstract.

ARTICLE IV. The maximum time for the presentation of a paper may be reduced at any session by a majority vote of the members present.

ARTICLE V. Each speaker in the discussion of a paper shall be allowed five minutes, but the total time allowed for the discussion of any one paper shall not exceed ten minutes.

ARTICLE VI. The maximum time for the discussion of any papers may be reduced at any session by a majority vote of the members present.

ARTICLE VII. The time allowed for presenting a paper or discussion may be extended by unanimous consent of those present.

ARTICLE VIII. All papers and reports presented to the Section become the property of the Association and shall be forwarded to the Editor of the JOURNAL immediately following the annual meeting by the Secretary of the Section.

SECTION X.

Amendments.

ARTICLE I. These By-Laws may be amended at any session of any annual meeting by a two-thirds vote of those present, provided notice of such amendment is given together with the text thereof at any previous session held at that meeting. Amendments must finally be accepted by the Council as not in conflict with the Constitution and By-Laws of the Association.

SECTION XI.

Miscellaneous.

ARTICLE I. Questions not specifically covered by these By-Laws shall always be decided in accord with the Constitution and By-Laws of the Association.

A. H. Clark stated that he had been responsible for the By-Laws of the Scientific Section, they were prepared during his term of office; in his opinion, it would add materially to the successful work of the Section if someone could be induced to hold the office of Secretary for a longer period. The Secretary could, under such conditions, keep up an active file of members and an index of what line of work they are most interested in. In his opinion, a permanent Secretary would add largely to the success of the Section.

A vote of thanks was given the officers and others of the Committee who had prepared the amended By-Laws.

PAPERS.*—PHARMACOLOGY AND BIOLOGIC ASSAY.

The following papers were read and discussed. Some have been printed in this, the October and September issues of the JOURNAL.

"The Toxicity of Aspirin-Quinine Mixture," by E. A. Ruddiman and C. F. Lanwermeyer.

"A Pharmacodynamic Study of Anthelmintic Properties of Two Oils Chenopodium," by A. R. Bliss.

"The Paramecial Method for the Standardization of the Digitalis Series," by Albert Schneider.

"Mexican Bitterbush," by Albert Schneider.

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* Abstracts of discussions of articles will be printed with the papers and omitted here unless some action requires prior notation.

"A Phytopharmacological Method of Assaying Digitalis," by David I. Macht and John C. Krantz, Jr.

"The Elimination of Mercurials, with Particular Reference to Mercurosal," by L. W. Rowe.

"A Palatable Cod Liver Oil Concentrate Possessing the Curative Properties of Cod Liver" (illustrated by lantern slides), by Harry E. Dubin.

"Further Studies on Insulin and the Skin" (illustrated by lantern slides), E. F. Müller and H. B. Corbitt.

Paper No. 2. "The Standardization and Stabilization of Aconite Preparations," by Edw. E. Swanson.

"The Intraperitoneal Injection of Certain Drugs," by W. H. Zeigler.

"A Demonstration of a New Blood Pressure Instrument," by W. H. Zeigler.

A paper from the division of Biology, Botany and Pharmacy by C. J. Zufall—"The Educational Value of a Medicinal Plant Garden"—was read.

A motion to extend the time of presentation of a paper by Dr. I. M. Kolthoff was carried. The first session of the Scientific Section was then adjourned.

SECOND SESSION.

The second session of the Scientific Session was convened at 9:00 A.M., August 28, by Chairman J. P. Snyder.

Owing to the absence of several authors of papers the regular order of the program was not followed.

The first paper read and discussed was that by George D. Beal and Edward O. North on "Silico-Tungstic Acid as a Quantitative Reagent for Alkaloids." (The first part of this contribution is printed in the October JOURNAL, and the second part in this issue.—Editor.)

The next was a paper, presented in abstract, by Charles A. Herrmann, "Notes on Separation of Glycerin for Qualitative Identification."

The paper by L. R. Wagener on "Electrometric Determination of Alkaloids by Use of Quinhydrone Electrode," was presented in abstract by Charles H. Stocking.

Then followed a paper by John C. Krantz, Jr. on "The Use of the Potentiometer in the Quantitative Analysis of Alkaloidal Solutions."

Dr. I. M. Kolthoff presented his paper on "The Concentration of Silver Ion Concentration of Argentum Proteinicum;" discussion thereon will be printed following the paper, in a later issue. President H. V. Arny referred to an occurrence in his earlier professional life when a student, who had not before met him (Dr. Arny), expected to see a more aged professor. So he also had expected, from past correspondence and Dr. Kolthoff's work, to meet a man of more advanced years. He (Dr. Arny), however, recalled his years in European universities, where special subjects or subdivisions of chemistry are given by the younger men; the head of the department presenting general chemistry. He was willing, on this occasion, to follow the example set by the latter. He spoke briefly on the progress made in science during his own time, and the spirit of research. Mr. George M. Beringer followed related lines of thought in his remarks and both congratulated the members on the opportunity of meeting and hearing Dr. Kolthoff.

President Arny was glad Dr. Kolthoff had brought his own message, and was pleased that he could inform him of his election as honorary member of the American Pharmaceutical Association; the youngest among the honorary members, all of whom resided in foreign countries.

P. M. Giesy read a paper on "Silver Ion Concentration—Studies of Colloidal Silver Germicides"—the co-contributor is R. B. Smith. The former also presented a paper on "Organic Protein and Colloidal Silver Compounds."

The next numbers of the program were—"Modification of Cow's Milk for Infant Feeding," by Elizabeth Gates and Wyly M. Billings, and "On the Standardization of Blood Coagulants;" the co-author of the latter paper with Mr. Billings is Alfred T. Perkins; the papers were presented by Mr. Billings.

"Concerning the Behavior of Gastro-Intestinal Enzymes in the Presence of Certain Antiseptics," was the subject of three papers by E. V. Kyser, assisted by C. R. Whitehead, H. E. Whitmire and Paul H. Thompson, respectively, in the following divisions—Part 1, "Pepsin on Egg Albumin;" Part 2, "Pancreatin on Starch;" Part 3, "Pancreatin on Milk."

Chairman A. G. DuMez reported for the Committee on Ebert Prize (other members of the Committee—Wilbur L. Scoville and Jacob Diner) that the members unanimously agreed the prize this year should be awarded to Prof. H. V. Arny for his work on the preparation of color standards and their application. "This work," he stated, "has been conducted over a period of years and the award is made on that basis, although the final article did not appear until last year."

The report of the Committee received general approval. The second session of the Scientific Session was then adjourned.

THIRD SESSION.

The third session of the Scientific Section[1] was called to order by Chairman J. P. Snyder at 9:00 A.M., August 29. On account of several authors not being present the order of the program was changed to permit of the reading of papers by those present; the titles follow in the sequence of their reading:

"The Permanence of Tincture of Iodine, U. S. P.," by D. M. Copley.

"Some Critical Points of Emulsification in Soap-Oil Emulsions," by E. V. Kyser and Frank C. Vilbrandt.

"Diethylphthalate III," by J. A. Handy and L. F. Hoyt.

"Notes on Pepsin Preparations," by C. C. Glover and C. G. Fuss.

"The Composition of Bismuth Salt in Glycerite of Bismuth," by C. C. Glover and T. F. Thorsberg.

"A Study of the Stability of Fluid Extracts," by Wyly M. Billings and Alfred F. Perkins.

"The Alkalinity of Magma Magnesiæ—as Determined by the Hydrogen Electrode, II; the Effect of Magnesium Carbonate, III;" by R. B. Smith and P. M. Giesy.

"The Anatomy and Botanical Position of Mire," by Heber W. Youngken.

E. V. Howell, before presenting his paper on "Cultivation of Opium Poppy in North Carolina," made reference to an exhibit of Aztec Indian drugs, by Charles Braubach; the paper had come too late for inclusion in the program.

"Silicic Acid in Its Varied Significance," by Arno Viehoever and Leon Wasserman.

"Chinese and Other Cardamoms," by Arno Viehoever and L. K. Sung.

"The Manufacture of Cod Liver Oil and Its By-Products" (illustrated with lantern), Arthur D. Holmes.

The following papers were read by title and referred for publication.

"Report on Proximate Analysis of Euphrasia Officinalis," by Wm. C. Melton and L. E. Sayre.

"Anthraquinone Content of Wormy Rhubarb,"[2] by A. A. Maier and C. W. Ballard.

"Oil of Echinacea Angustifolia,"[3] by Fritz Bischoff and Edward Kremers.

"A Chemical Examination of the Root of Leptotaemia Dissecta," by Nellie Wakeman.

Chairman F. E. Bibbins reported for the Committee on Nominations as follows:

Chairman, Paul S. Pittenger; *Secretary*, F. F. Berg; *First Vice-Chairman*, John C. Krantz, Jr.; *Second Vice-Chairman*, E. V. Kyser; *Delegate to the House of Delegates*, J. P. Snyder.

Robert J. Ruth moved that the report of the Committee be received and the nominations closed; the motion was seconded and carried.

Chairman Arno Viehoever presented the report of the Committee on Quality of Medicinal Products.

The motion of Heber W. Youngken, to receive the report and approve the recommendations of the Committee, was seconded and carried.

Lyman F. Kebler stated that the late Prof. E. L. Patch was chairman of the Committee on Quality of Medicinal Products for about 10 years and, thereafter, until his death a member;

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[1] September JOURNAL, p. 800. A joint session of the Scientific Section with the Section on Practical Pharmacy and Dispensing was held Aug. 28, but is reported following these minutes and preceding those of the Section on Practical Pharmacy and Dispensing; seniority would bring the Minutes of the Section on Education and Legislation next, but for apparent reasons these are transposed.—Editor.

[2] Printed in September JOURNAL, p. 810.

[3] October JOURNAL, p. 898.

he contributed liberally to its reports and it was largely due to his energy and efforts that the Committee was continued. The speaker moved that a brief statement outlining the work of Professor Patch be included in the report of this year. The motion was seconded and carried.

The report of the Committee on the Chairman's Address was called for; First Vice-Chairman F. F. Berg assumed the Chair. Chairman Robert J. Ruth of the Committee made a verbal report, recommending the acceptance of the recommendations of Chairman J. P. Snyder. E. V. Howell seconded the recommendation.—The motion was carried.

Election of officers was proceeded with; Arno Viehoever moved that the Chairman of the Committee on Nominations cast an affirmative ballot for the nominees; the motion was seconded and carried.

The officers were duly installed and each expressed appreciation for the preferment. A vote of thanks was given retiring Chairman J. P. Snyder. The final session of the Scientific Section was then adjourned to convene at the next annual meeting of the American Pharmaceutical Association.

JOINT SESSION OF THE SCIENTIFIC SECTION AND THE SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The joint session of the Scientific Section and the Section on Practical Pharmacy and Dispensing was convened by Chairman J. P. Snyder of the Scientific Section at 8:00 P.M., Thursday, August 28, who stated that the purpose of the meeting was to listen to, receive the reports on and discuss the revisions of the U. S. Pharmacopœia and National Formulary. The following report was presented:

SOME FEATURES OF THE FORTHCOMING PHARMACOPŒIA (TENTH REVISION).

BY E. FULLERTON COOK.

As the time is not far distant when the U. S. Pharmacopœia, Tenth Revision, is expected to make its appearance, it is fitting that a review of its salient features should be placed before this Association, which has always contributed so largely to its development and success.

The Chairman of the Committee of Revision has recently completed a review of much of the Pharmacopœial literature of the past century and is impressed anew by the immense amount of labor and the untiring and unselfish service entering into the creation of our present National standard for medicines. The Tenth Revision has been builded upon the visions and ideals of a group of physicians and pharmacists whose names must not be forgotten. The book to-day stands as an enduring monument to the memory of Dr. Lyman Spalding, Dr. Franklin Bache, Dr. George B. Wood, Dr. Joseph Carson, Dr. Robert Bridges, Alfred B. Taylor, William Procter, Jr., George D. Goggeshall, Dr. E. R. Squibb, C. Lewis Diehl, William H. Thompson, Frederick B. Power, Albert B. Prescott, Joseph P. Remington, Charles Rice, John M. Maisch, Dr. Horatio C. Wood, Louis Dohme, S. A. D. Sheppard, Frederick Hoffmann, P. W. Bedford, George F. H. Markoe, Charles Caspari, Jr., Oscar Oldberg and hundreds of others who properly share the credit due from our generation.

The Pharmacopœia was started by physicians, but they early acknowledged the necessity of securing the coöperation of their pharmaceutical associates and in fact at one period pharmaceutical interests largely dominated the revision.

In the Tenth Revision this former condition has been adjusted by placing responsibility for the scope upon the 21 physicians of the Committee. They also decided doses and all therapeutic questions, so that the physicians are contributing a constructive and fundamentally important part of the revision. In many other divisions such as nomenclature, biological products and in bio-assays they are also taking an active part in the revision. More than in any previous revisions the work is being divided among specialists and each group held responsible for the decisions in its division and the several sub-committees have been strengthened by the election of sixty or more experts, serving as auxiliary members to the sub-committees.

Throughout the current revision the General Committee has been asked to vote only on general questions. All reports and discussions are placed before the General Committee and members are invited to comment freely on every proposition, and their comments are published in the Circulars, but the final decision on technical questions has remained with the groups of ex-

perts on the several sub-committees who should be best qualified to settle differences when they occur.

The selection of the therapeutically valuable substances for the new book has therefore been decided by the physician and the U. S. P., Tenth Revision, will represent a materia medica selected from the entire world, and, as only controlled products were restricted, the list of drugs, chemicals and preparations of the new Pharmacopœia should represent the most valuable medicinal agents known to the medical science of our times.

A total of about 650 articles has been admitted; among these are found some articles required only in manufacturing processes, while others represent different forms of the same remedy, so that the actual number of individual medicinal agents is much less than the total number of titles.

Admissions.—Among the titles added to the U. S. P. X are the following:

Proposed English Title.	*Similar Market Products.*
Acetylsalicylic Acid	Aspirin
Diacetyl Tannin	Tannigen
Albumin Tannate	Albutannin, Protan
Amidopyrine	Pyramidon
Strong Silver-Protein	Strong Protargin, Proganol Protargentum, Protargol
Mild Silver-Protein	Mild Protargin, Argyn Argyrol, Gargentos
Arsphenamine	Arsenobenzol, Diarsenol Salvarsan
Barbital Sodium	Sodium Diethylbarbiturate Veronal-Sodium
Barbital	Diethylbarbituric Acid
Barium Sulphate	(Purified for X-ray examinations)
Ethyl Aminobenzoate	Benzocaine, Anesthesin
Calcium Iodobehenate	Sajodin, Calioben
Carbon Tetrachloride	(Highly purified)
Carbromal	Adalin
Chloramine	Chloramine-T
Dextrose	Grape Sugar
Dichloramine	Dichloramine-T
Epinephrine	Adrenaline
Ipomoea	Replaces Scammony
Solution of Epinephrine Hydrochloride	Solution of Adrenaline Hydrochloride (1 in 1000)
Surgical Solution of Chlorinated Soda	Carrel-Dakin Solution
Neoarsphenamine	Neodiarsenol, Neosalvarsan, Neoarsenobenzol
Chaulmoogra Oil	
Chlorinated Paraffin	Chlorcosane
Phenobarbital	Phenyl-ethyl-barbituric Acid, Luminal
Phenolsulphonephthalein	Phenol Red
Procaine Hydrochloride	Novocaine
Quinidine Sulphate	
Quinine Ethylcarbonate	Euquinine
Resin of Ipomoea	Replacing Resin of Scammony
Sodium Diphosphate	Sodium Acid Phosphate, Sodium Dihydrogen Phosphate
Spiritus Frumenti	Whisky
Spiritus Vini Gallici	Brandy
Thyroxin	

Nomenclature.—The Sub-committee on Nomenclature has carefully studied all Latin and English Titles, also abbreviations and synonyms, and these have only been changed for the sake of greater scientific accuracy or for simplification.

Some modifications are indicated in the table below:

English Titles Proposed for U. S. P. X.	*U. S. P. IX English Titles.*
Diphtheria Antitoxin	Purified Antidiphtheric Serum
Tetanus Antitoxin	Purified Antitetanic Serum
Crude Tetanus Antitoxin	Antitetanic Serum
Orange Flower Water	Stronger Orange Flower Water
Tolu	Balsam of Tolu
Chloral Hydrate	Hydrated Chloral
Cinchophen	Phenylcinchoninic Acid
Eucaine Hydrochloride	Betaeucaine Hydrochloride
Gluside	Benzosulphinide
Soluble Gluside	Sodium Benzosulphinide
Lactose	Sugar of Milk
Lead Oleate Plaster	Lead Plaster
Solution of Pituitary	Solution of Hypophysis
Methenamine	Hexamethylenamine
Pituitary	Desiccated Hypophysis
Sucrose	Sugar
Sulphonal	Sulphonmethane
Trional (proposed)	Sulphonethylmethane
Mercurial Ointment (33 per cent.)	Diluted Mercurial Ointment
Stronger Mercurial Ointment (50 per cent.)	Mercurial Ointment
Ointment of Oleated Lead	Diachylon Ointment
Small Pox Vaccine	Vaccine Virus

Standardization.—The medicinal profession is asking for dependable medicines. An outstanding feature of the U. S. P. X will be its effort to provide methods for standardizing chemicals and preparations. One of the difficulties heretofore in the application of biological assays has been the variable standards used. The sub-committee has carefully defined and fixed the standard for each substance so to be assayed and the Department of Agriculture, Bureau of Chemistry, is coöperating by offering manufacturers (without cost, it is hoped) samples of the standard, conforming to the requirements of the U. S. P., these samples to be used in adjusting the activity of new lots.

This service of the Bureau of Chemistry is entirely optional but it is confidently believed that it will be taken advantage of by most manufacturing pharmacists and that in practice it will produce a degree of dependability not heretofore possible.

The opportunity and duty is before every pharmacist to supply physicians and their patients with only such official medicines as conform to Pharmacopœial standards and this means not only a careful preparation or selection of the original product but also intelligent and conscientious storage and handling while under his control.

The comparatively recent investigations into the active constituents of Cod Liver Oil have led to the suggestion that an optional assay method for determining the "Vitamin A" content be provided for the U. S. P. X.

A special committee, with Dr. John F. Anderson as the referee, is studying this question and is inclined to recommend its introduction. The adoption of an optional assay for Cod Liver Oil would have the advantage of standardizing a method, and if but a minimum standard is established, it will permit a physician to select an oil of high vitamin content when a lack of fat tolerance makes large doses objectionable. It would be required that a statement be placed on the label of any oil so assayed to the effect that "this assay does not indicate the antirachitic value." Unfortunately no practicable assay for this specific and most valuable activity of Cod Liver Oil is yet available.

Tests for Identifying Chemicals.—The details for identifying tests for many inorganic chemical substances have been placed in a special chapter in Part II and are only briefly referred to under the chemical. This feature is but an extension of the policy followed in previous revisions for special tests such as those for *arsenic* and *heavy metals*, avoiding the necessity of frequently repeating details.

Sampling Drugs.—The sub-committee on botany has recognized the necessity of standardizing "sampling methods" in the examinations of commercial drugs and when the various tests for purity or strength are to be applied, the lot must represent as nearly as practicable a fair and average sample. Limits have also been fixed in many drugs for "ash insoluble in hydrochloric acid" ("acid-insoluble ash") as a means of forcing the proper cleaning of crude drugs.

Whisky and Brandy.—The decision by the physicians of the Committee to admit these articles that they might be standardized has been widely and favorably commented upon in the press of the country.

The proposed texts will soon be published and will include tests for detecting impurities which might be present, especially for those denaturing substances authorized for use in industrial alcohols as methyl alcohol and diethylphthalate.

The proposed official requirements do not specify that Whisky must be "bottled in bond" although this is a provision of the revised "Regulation 60" of the Treasury Department.

Sub-Division of Texts.—The description and tests of chemicals and drugs in the new Pharmacopœia will be slightly different in appearance from those in the U. S. P. IX, as they will be divided with appropriate sub-titles.

"*Description and physical properties,*" "*Tests for identity,*" "*Tests for impurities,*" and "*Assay*" will be those most frequently used. The accurate sub-division of monographs under such titles is, in some cases, practically impossible and often the description of color and taste is a factor in determining both identity and purity, but it is believed that this condition can be covered by a statement in the "General Standards." The sub-division is only for convenience and in no degree releases the manufacturer or dealer from any of the requirements of the text.

General Standards.—For several revisions important general standards have been placed in that part of the Pharmacopœia which precedes "Part I" and the heading "Introductory Notices." It is proposed to place these statements in Part I, of the U. S. P. X, under the heading "General Standards," and have them precede the monographs.

This place will emphasize their importance and give them prominence.

Changes in Preparations.—It will be of interest to many to know that but one *Tincture* of *Opium* will be official and that made from opium deodorized by the paraffin process.

Chalk Mixture is to be made directly from prepared chalk with 10 per cent. glycerin and sufficient cinnamon water and water. The sugar and acacia are to be omitted. *Compound Chalk Powder* will remain official, however, for those physicians who care to use it in powders or mixtures.

The title *Cinchona* will include "Yellow" and "Red" cinchona and the compound tincture will no longer specify the Red variety.

The Tincture and Oleoresin of Capsicum will include an organoleptic test in which 5 cc. of a sweetened, aqueous solution, representing about 1 part of the drug in 7000 parts of liquid (about 1/100 grain of capsicum), "should produce a distinct sensation of pungency and the taste of capsicum in the mouth and throat."

Proofs.—Galley proofs of the new Pharmacopœia are now being issued to members of the Committee of Revision and Board of Trustees and will continue regularly, at the rate of about 25 pages a week; when the entire manuscript has appeared in "galley," "page proofs" will be sent to the Committee and Board and also to a limited number of qualified proof readers, not members of the Committee, and the first printing will be in sufficient quantity to meet the immediate demands.

The Spanish Translation.—Arrangements have been completed for translating and printing the Spanish edition and as soon as page proofs are available this will be started that the new revision may be immediately available in Latin-American Countries.

In presenting this brief review of the forthcoming Pharmacopœia the immense mass of available material renders it difficult to know what will be of greatest general interest. Pages could be written of the changes in the chemical texts alone or the field of vegetable drugs, where the sub-committee discussions, more than 1500 typewritten pages, could occupy all of the time, but, outstanding features have been brought to your attention and any one who is interested in a specific field may obtain upon application a copy of the published "Abstract of Proposed Changes and New Texts."

Chairman Cook spoke of the Chinese edition of the U. S. Pharmacopœia. See pp. 662–663, July JOURNAL A. PH. A.

Dr. I. M. Kolthoff said the Pharmacopœia of the Netherlands was being revised very much along the lines of the U. S. Pharmacopœia.

Chairman Ruth of the Section on Practical Pharmacy and Dispensing presided during the discussion of the report of the Committee on National Formulary by Chairman W. L. Scoville. See report and abstract of discussion in October JOUR. A. PH. A., pp. 972–974.

After the discussion of the report on the National Formulary, Chairman J. P. Snyder resumed the chair. He introduced Dr. J. C. Munch as the next speaker.

BIOASSAY STANDARDS.

BY J. C. MUNCH.*

The variation in strength of pharmaceutical preparations on the market is uniformly recognized as undesirable and, in many instances, as dangerous. Much effort has been directed toward reducing this variation. Most manufacturers are attempting to produce pharmaceutical preparations in compliance with definite specifications, both qualitatively and quantitatively. The various steps in manufacturing processes and the factors affecting subsequent deterioration have been closely studied. More uniformity has been obtained where accurate methods of assay are available, such as those used in testing strychnine preparations, than in connection with preparations for which no definite assay methods have been worked out.

Chemical methods of assay have been worked out, tested and adopted, for a number of drugs and their preparations. For a group of products, however, chemical assays are not at present feasible. The active principle (or principles) of such products may be unknown, or it may not be possible by present methods chemically to separate their physiologically active constituents. Included in this group are some of the most-used drugs, such as digitalis and pituitary extract. Their clinical importance has led to extensive investigation of means of assay, and in assaying certain of these drugs the reactions of animals have been utilized.

The necessity for providing adequate assay methods in order to reduce variability to commercially feasible limits has been under consideration by several pharmacopœial revision committees. The Committee of 1890 reported (Preface, U. S. P., 7th Revision, 1890, p. XXIX):

> "Among the subjects brought prominently to the attention of the Convention of 1890 was the establishment of a fixed proportion, or of fixed limits, of the active principles in preparations made from the more energetic drugs capable of being assayed. * * * the Convention finally decided to refer the introduction of assay processes and of so-called standardized preparations to the discretion of the Committee. The Sub-Committee, which was subsequently appointed to take charge of this work, * * * finally came to the unanimous conclusion that reliable methods of assay * * * are available at the present time, for only a few drugs. * * * after a careful study of the subject, it was resolved to apply processes of assay, in this revision, only to cinchona, Nux Vomica, and Opium. * * * There is a fair prospect, however, that a further, extensive study of the problem will render it possible to increase the number of assayed preparations materially at the next revision."

The following statement was made in the "Abstract of the Proceedings of the National Convention of 1900," U. S. P., 8th Revision, 1900, page XXXI:

> "*4. Assay Processes.* The Committee is instructed to append assay processes to as many of the potent drugs and preparations made therefrom as may be found possible, provided that the processes of assay are reasonably simple (both as to methods and apparatus required) and lead to fairly uniform results in different hands. As regards the products of such assays, tests of identity and purity should be added wherever feasible. Physiological tests for determining strength should not be introduced by the Committee."

In the "Abstract of the Proceedings of the Ninth Decennial Convention, 1910," U. S. P., 9th Revision, page XXXIII, the following recommendation occurs:

> "*10. Assay Processes.* * * * it is recommended that biological tests or assays, when accurate and reliable, may be admitted."

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* Bureau of Chemistry, U. S. Dept. of Agriculture.

Bioassay methods for aconite, cannabis, digitalis, epinephrine and pituitary preparations were included in U. S. P. IX. The 1920 Convention of the German Pharmacopœial Revision Committee considered the inclusion of bioassay standards in the 6th Revision of their Pharmacopœia and apparently decided to include the methods listed in U. S. P. IX.

The matter of bioassays was thoroughly discussed at the 1920 Convention of the 10th Revision Committee. The sub-committee on bioassays recommended that bioassay methods for aconite, cannabis, digitalis, epinephrine, ergot and pituitary preparations be required in U. S. P. X. The methods recommended have been tested and have been found to be practical and to yield reasonably consistent results in the hands of adequately trained workers.

The Bureau of Chemistry was asked by the sub-committee whether it would consider furnishing prototype standards for use in standardizing those drugs and preparations which require bioassay. After considering the matter from various aspects the bureau finally decided that it would be feasible to do so and that supplying these standards would lead to uniformity in application of bioassay methods. It was believed that such action would tend to reduce the variability and to improve the general character and quality of these drugs as marketed, and would materially aid in the enforcement of the food and drugs act. Accordingly, the bureau is prepared to test, pack and distribute such prototype standards as the revision committee decides on to manufacturers and others requesting them. A statement such as the following will be contained in the preface of U. S. P. X:

> "In order to facilitate the adoption of the standards for biological assays prescribed by the Pharmacopœia, the Bureau of Chemistry of the United States Department of Agriculture has indicated its willingness to supply, upon application, for the purposes of comparative tests, substances conforming to said pharmacopœial standards." (Circ. 333, p. 1827.)

The bioassay sub-committee of the revision committee selected the following standards:

(1) For digitalis, strophanthus and squill: Ouabain.
(2) For cannabis sativa: Fluidextract of Cannabis.
(3) For ergot: Fluidextract of Ergot.
(4) For epinephrine preparations: Epinephrine powder.
(5) For pituitary preparations: Pituitary powder.

Inquiries were sent to manufacturers and bioassayists as to the quantity of each standard they would need per year. Estimates of the total amounts required per year have been based upon the replies.

The question as to the cost to the bureau of procuring and preparing these standards and what charge ought to be made for such samples then arose. To facilitate the use of common standards for these products the bureau desired to distribute them (with the possible exception of ouabain) without charge. The chairman of the bioassay sub-committee, Dr. C. W. Edmunds, and the chairman of the revision committee, Dr. E. Fullerton Cook, have given careful consideration to this matter. Steps have been taken toward the establishment of coöperative relations in accordance with which certain manufacturers would furnish the bureau sufficient quantities of the necessary materials from which to prepare the prototype standards. In case full coöperation is arranged, it is hoped that reasonable quantities of such standards can be furnished without charge. In case of excessive requests for standards, it may be necessary to make some charge.

The bureau is ready at all times to coöperate in any movement which tends to improve the quality of drug products on the American market and to assist manufacturers in decreasing the variability of marketed preparations. The highest degree of coöperation has always been extended to the bureau by manufacturers. Every facility has been placed at its disposal in conducting investigations of this character. Willingness on the part of the manufacturers to furnish material for preparing sufficient standards for distribution exemplifies such helpful coöperation.

The standards set for these preparations in U. S. P. X have recently been published by the revision committee and are essentially the same as those contained in U. S. P. IX.

For aconite preparations the dose required to kill two out of three guinea-pigs within six hours after subcutaneous injection has been chosen. Certain figures have been adopted as M. L. D. standards.

For digitalis, strophanthus and squill preparations, figures are adopted for the minimum systolic dose of ouabain required to stop the heart of a frog in 1 hour, under specified conditions.

For this assay, a standard preparation of ouabain is needed. The Bureau of Chemistry has been able to obtain supplies of this drug from various sources and has collected an amount deemed sufficient for use as the official standard. Nevertheless, the utmost economy in its use is desirable. In the interest of conserving the supply, the bureau can only furnish it to meet definite needs. It is proposed to distribute it to manufacturers so that they may be assured that they are using the same unit of measure for testing their products. For experimental work and for demonstrations in pharmacy and medical schools, other substances of similar action, such as a standardized tincture of digitalis or of strophanthus, can be used instead of ouabain.

Cannabis is to be tested upon dogs, and ergot upon white leghorn cocks. The effects in each instance will be compared with the effects produced upon the same animals by prototype standards in the form of fluidextracts. Fluidextract of Cannabis should produce the same degree of incoördination in dogs after a dose of 0.03 cc./Kg. of standard as is produced by the same dose of the test sample. In case the effects produced by 0.03 cc./Kg. of prototype standard are not considered satisfactory for assay purposes, larger doses of the standard may be used to produce the desired end-reaction, which is then to be duplicated by the test sample. However, such doses must not exceed 0.10 cc./Kg.

Test samples of Fluidextract of Ergot should produce the same darkening of the comb that the standard produces.

Test samples of epinephrine are to be assayed biologically by determining the effect upon the blood pressure of dogs, as compared with the effect of a standard epinephrine preparation.

The standard for pituitary preparations has been carefully studied by the sub-committee. The standard adopted as a result of their investigations consists of the dried, fat-free, ground posterior lobe, to be prepared in accordance with certain specifications. The bureau is now engaged in preparing a batch of this material. It is proposed to supply the powder in 100 mg. lots in ampuls.

In recapitulation, in order to be of more specific assistance to manufacturers in their efforts to reduce the variation in bioassay drugs and in order better to assure the stability and potency of the Nation's drug supply as was contemplated by the provisions of the food and drugs acts, the Bureau of Chemistry will furnish upon request prototype samples of ouabain, F. E. cannabis, F. E. ergot, epinephrine and pituitary powder. Probably no charge will be made for these samples, with the possible exception of ouabain. In undertaking this distribution, the bureau is not unmindful of the difficulties involved. Many helpful suggestions have already been received, ranging from those regarding the source of ampuls to be used, to those relating to methods of conserving ouabain. The rate of deterioration of these standards and the frequency of their replacement are now being studied by the bureau. Any suggestions in connection with this project, such as the date at which standards will be desired, etc., will be greatly appreciated.

ABSTRACT OF DISCUSSION.

Paul S. Pittenger felt assured that the coöperation of the Bureau of Chemistry in this work marks an epoch in physiologic standardization. He dwelt upon the importance of having a central bureau for issuing the standards, so there may be uniformity in the preparations of different manufacturers. He gave several illustrations drawn from past experiences to emphasize this point, relating to the standardization of cannabis preparations.

L. W. Rowe said he had nothing to add except to say that the troubles of manufacturers have largely been due to various sources of standards which will now be uniform. He considered that ergot presented the greatest difficulties, because of the uncertain rate of deterioration—the standard suggested by Dr. Munch is probably the best possible.

D. M. Copley was pleased with the report; Frederic Fenger was satisfied with the pituitary standards.

Chairman Cook called attention to the international interest of the subject; a committee of the League of Nations decided to recommend the plan under discussion to all countries. The U. S. Pharmacopœia will make the first set of standards available and may become an international factor and thus, through the coöperation of the Bureau of Chemistry, the U. S. Pharmacopœia will render a world service.

H. A. B. Dunning asked relative to the sources of supply of ouabain. W. L. Scoville asked whether there would be discrimination between varieties of ergot and of cannabis; his understand-

ing was that fresh Spanish ergot is more active than Russian but the rate of deterioration is greater and, in his opinion, an investigation of this would be of value. E. L. Newcomb referred to domestic ergot and cannabis. E. A. Ruddiman had nothing to add; he desired to know when the standard would be obtainable. H. A. B. Dunning asked whether investigations are going on with a view of improving the preparations of the drugs under consideration.

Dr. Munch replying said that the questions presented were concerned with deterioration, the source and time of supplying standards. He stated that manufacturers were giving much attention to deterioration and that the subject would in that way be taken care of, at least to some extent. It is the purpose to provide composite fluidextracts (of ergot and of cannabis) each from ten different lots of the respective drugs. Combining these there will be precipitation, but one precipitate is better than ten. This composite fluidextract will be aged, decanted and sealed; as soon as a standard falls below a desired strength a new standard will, in like manner, be prepared—the assays are being made at regular intervals.

The speaker referred to the international significance of the work, as mentioned by Chairman Cook.

When he left Washington (two weeks prior to convention) eight lots of ouabain from Germany were being assayed; other lots had come from manufacturers. A supply of pituitary powder was on hand, which should last for four years. Ergot must be aged; this is not the case with cannabis, so this will be available earlier. It may be possible to grow strophanthus in the United States and steps are being taken to make that possible; if that is feasible the supply of ouabain will be assured. Dr. Munch concluded by saying that he had received full coöperation of manufacturers in every way and he wished to publicly and definitely go on record expressing thanks to the manufacturers for the coöperation they have extended to the Bureau.

Dr. Munch was given a vote of thanks and the session was adjourned.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The first session of the Section on Practical Pharmacy and Dispensing was convened by Chairman Robert J. Ruth at 9:35 A.M., August 28. Owing to the absence of the Secretary, Ivor Griffith was asked to serve in that capacity, and F. W. Nitardy presided during the reading of the Chairman's address, which follows:

CHAIRMAN'S ADDRESS.

BY ROBERT J. RUTH.

It was with a feeling of deep appreciation that your Chairman assumed the responsibilities of the office which you entrusted to him and he has at all times endeavored to serve you to the greatest extent of his humble capabilities, mindful of your reposed confidence and of the resultant effects of either the failure or success of his administration.

It is appropriate at this point to express the appreciation and thankfulness that your Chairman feels for the staunch support of his associates and Delegate Irwin A. Becker and their spirit of close coöperation and helpfulness, all of which has made the work of your Chairman a pleasure to him and has assisted greatly in the smooth functioning of the affairs of the section and accounts in no small degree for the success of our program. Your Chairman feels that this occasion should not pass without special reference being made of our fellow member Edward Swallow, who, although a bed-ridden invalid, fights valiantly with his pen for pharmaceutical prestige and recognition, and his many letters expressing his optimism and high ideals have ever been an inspiration to your Chairman in carrying on his duties. Your Chairman would like to continue on with a long list of those who have so kindly and willingly helped him throughout the past year in the preparations for this meeting, but as time does not permit, he sincerely hopes they will know that he does not minimize the value of their service or fail to appreciate it, and this pertains also to the President and Secretary of the Association and to the Editor of the JOURNAL.

During the past year, Chairman Snyder and Secretary Pittenger of the Scientific Section met with President Arny in New York City and drafted proposed By-Laws for the Scientific Section. Your Chairman was called into conference when these proposed By-Laws were given final consideration before being presented before the Scientific Section for adoption at this meeting and it was then suggested by your Chairman that they be made the model By-Laws for all of the

sections of the Association. They will be read to you by the Secretary of this section and your Chairman would make the specific recommendation that they be passed upon by this section, becoming its By-Laws, subject, of course, to the approval of the Council and that the Council be notified of such action and its approval asked.

During the past year your Chairman has given much time to a deep study of the present plight in which American Pharmacy is confusedly struggling. An effort to write a comprehensive report finds your Chairman just as confusedly struggling as the conditions suggest a series of battling circles with no clearly defined start or finish, reminding one of the sea charts of that delightful old book-keeper characterized by the author of "Blowing Weather," a most refreshing book, depicting the apothecary of the early days of the 19th century. But we must remember that the old book-keeper's circles led to a very practical and pleasing conclusion, so we must try to make a start that we may seek the end.

Your Chairman's experiences over a period of the past eleven years since his graduation from college, first as a member of the faculty of the medical and pharmaceutical departments of a Southern University; next, with a large pharmaceutical and biological house, then as proprietor of two retail pharmacies in the Middle West, and finally his connection with a large Eastern college of pharmacy, have served him with a great amount of information on the subject of the condition of American pharmacy; and, as this section is visited by the retail pharmacists the hospital pharmacists, the laboratory pharmacists, the manufacturing pharmacists and members of the faculties of colleges of pharmacy, this seems to be the proper place for your Chairman to attempt to present his humble opinions.

First, let us take up the main evils confronting our chosen profession. We have the bootlegging drug store, the drugless drug store, the patent medicine store, the cut-rate situation, office girls compounding and dispensing medicine in physicians' offices, untrained persons compounding and dispensing medicines in many hospitals where every consideration is paid to sanitation, clinical diagnosis and the care and welfare of the patient, but little or no attention to the preparation, standardization, potency or compounding of the medicine which, in the main, is the treatment depended upon to restore the patient to good health; the lack of recognition accorded pharmacy by the United States Government as evidenced by the pharmacists' standing in the United States Army and Navy and other governmental departments; and other evils of more or less importance. It sounds so bad that we think sometimes there is almost no hope. On the other hand, let us consider that when conditions remain just bad enough to be tolerated they often are tolerated for a very long period of time, but when they become too bad they are more often remedied. Can we not suppose that American pharmacy has reached that point where conditions have become unbearable? Can we not hope for the remedies soon? Remember that a bad condition does not remain stationary—it either gets worse or better. We can hardly think of worse conditions confronting the practice of pharmacy. Is it not at its lowest ebb? Can we not therefore look for a bettering of conditions? Sometimes your Chairman likes to compare our situation with that of General Washington and his struggling little Continental Army of 5,000 weary souls, during that terrible winter when they camped in the snow-covered valley of despair—Valley Forge. Every poor suffering soul left his footprints of blood in the snow. There were deserters, those who lost hope entirely. Have you seen the portrait of Washington, picturing him as he sat in deep study on the very verge of despair trying to find the way out? He found it! Was hope lost? Darrow might call this a fantasy bordering on a paronomasia, but this is a world of comparison.

Next, let us consider the fact that too small a percentage of the medicines taken internally and used externally are prepared or sold by the legitimate manufacturing pharmaceutical houses, or by the retail pharmacists. An astonishingly large per cent. is manufactured by concerns having no professional standards and sold from patent medicine stores, through mail order houses or vended from house to house by people in each instance having no knowledge of medicines. Is this not a menace to public health? Is it fair to the pharmacists who are bound by every manner of regulations from municipal to national? No, it is not fair, nor is it fair for the unscrupulous imitator to prostitute the name of our profession with his bootlegging drug store or his drugless drug store, or for untrained persons to assume the duties of pharmacists in physicians' offices or hospitals. So much for the evils that confront the practice of pharmacy. We could go on to the end of this session and into the next one on this subject. What we want to know is, what are we

going to do to remedy conditions? The only answer is, organization, public information and legislation.

The late President Theodore Roosevelt said that every man owes an obligation to his profession. It is indeed unfortunate that this address is not reaching the thousands of pharmacists not in attendance at this convention, as they are the ones to be reached, not you, ladies and gentlemen, who devote so much of your time and energies to the uplift of pharmacy. But we must carry on.

It is discouraging to hear so many pharmacists say that they do not want to be known as such, because the public's impression of a pharmacist is not a good impression. Your Chairman does not believe this, and you here do not believe it. Your customers are your friends and they come to you with the innermost secrets of their hearts, their troubles they impart to you, and they seek advice from you. You know that. Does it then follow that their opinion of you has suffered? What we want the public to think of us and our profession they will think. Nevertheless, the public certainly does not fully appreciate the pharmacist and his great service to humanity. We must impress it with this fact. How shall we go about it? And do we really deserve more recognition? Is the pharmacist necessary in America? Should he be more highly educated? These questions all come to us. First, let us consider whether or not the pharmacist is necessary to the American public. Who will handle the poisons and the acids and the narcotics and other drugs and chemicals, assuring the great amount of safety which is now assured to the public while the pharmacist handles them? Does anybody else care to handle them legitimately? Does the drugless drug store care about putting up a half pint bottle of muriatic acid? No, there is no money in it, considering the time involved, not to mention the knowledge required, or the danger involved. Well, if it is fit and proper for the pharmacist to dispense and sell all of the disagreeable things pertaining to his profession how about a law making it unlawful for any one to sell anything used internally or externally for medicinal purposes, either packaged or unpackaged, except by a registered pharmacist and from a licensed pharmacy owned and controlled by a registered pharmacist? It seems that this would give the registered pharmacist the opportunity to dispense and sell the drugs, medicines and medicinal supplies used in this country, which in itself would be so considerable a task that the pharmacist would have less time to exploit the virtues of various brands of hairnets and glass beads, or need to sell sandwiches and toys. As conditions now exist he must sell everything he can think of to pay the ever-increasing overhead, and he cannot be blamed for wanting to meet his expenses and make a living for himself and his family.

Your Chairman is convinced that the vast majority of students study pharmacy because they love the profession. They have the high ideals, in the majority of cases, which are held by their preceptors, and they are imbued with a desire to serve their suffering fellowmen. Certainly it would be foolish to study pharmacy without this high inspiration. It may be argued that the average student goes to college because he happened to go to work in a drug store. Still he could hardly spend four years in the drug store and go through college without having acquired this desire to serve humanity. Shall he then be graduated and sent out into a field where he cannot find the proper outlet for his talents and, finally disillusioned, be obliged to resort to commercial storekeeping as his life's work? Legislate pharmacy into a recognized profession, so that a graduate pharmacist can devote his life to the practice of pharmacy and make an income in proportion to his knowledge and position in society, and it will then not be difficult to raise the standards of our college courses to a minimum course of four years, five days a week, leading to an appropriate degree.

Now, is the pharmacist merely desiring this legislation from a selfish motive, or is there another object? Where does the public come in? Who suffers? To answer the last question first, no one suffers. Those who would prey on the misfortunes of the unsuspecting and suffering public must discontinue their criminal practice. The pharmacist gains only what is rightfully his. The public is protected. For example, the young mother goes into the patent medicine or drugless drug store, and she asks for some calomel tablets. The clerk hands her an original bottle containing 100 tablets of one-half grain each and he informs her that the price is 19 cents. Whereupon the young mother asks how to give them to the baby who is five weeks old and the clerk replies that he guesses that the directions are on the bottle. If this young mother had gone to a registered pharmacist, you can readily see that she would have been given the proper information. The pharmacist would have rendered her the information and service to which she was en-

titled and he would have considered it his professional duty to correct her purchase. Public health would not be jeopardized.

The pharmacists have failed to use the greatest argument within their power—that of public health. It pertains as surely to pharmacy as to medicine and dentistry.

Your Chairman is optimistic concerning the Pharmacy Headquarters Building project and what it will do to unite pharmacy under one great banner. The manufacturing, wholesale, retail and hospital pharmacists have much in common to gain through legislation. We are right in our objective, and right wins. Public health is at stake; fair play is our just due.

Your Chairman prays that you do not consider his address impertinent, nor does he think that much that he is saying is new to your minds, but he hopes to bring the foregoing once more to your attention, and to offer the following suggestions not in the form of recommendation, but it is his prayer that these suggestions will be given some thought on the part of the members of the Association and that they may be instrumental in forming a definite plan of action.

First: It is essential to unite all pharmaceutical interests in a great movement for public information and constructive and protective legislation.

Second: A "National Pharmaceutical Week" could be inaugurated with specially written articles prepared by men of national prominence in pharmaceutical circles, appearing in newspapers and magazines throughout the nation; and speakers from our ranks addressing the Rotary, Kiwanis, Exchange, Lions and similar clubs, Chamber of Commerce, women's clubs, neighborhood clubs and other similar organizations throughout the United States, which are so very instrumental in shaping our national thought. Public health should be the keynote.

Third: Radio broadcasting of a constructive nature, as has already been inaugurated in some of our colleges, should be continued on a more elaborate scale and also carried on by our All-Pharmacy Headquarters when it is complete and functioning, thereby educating the public in our favor.

Fourth: We are like a giant monster that knows not its own strength. A great political organization would result from united pharmacy, which could accomplish any reasonable legislation. The American pharmacy to-day is the greatest political center in the nation, 50,000 petitions could be placed in the reputable pharmacies throughout the country and secure 25 to 50 million signatures, asking for the passing and enforcement of proper legislation to protect public health. A special type of petition could be used for the signatures of physicians, who will soon realize that misuse of the word drug and the indiscriminate sale of medicines is as slowly and surely undermining medical practice and medical prestige as it is that of pharmacy. The medical practitioner has his natural enemies and they are common enemies to both medicine and pharmacy, so it follows that the medical men need our support as surely as we need theirs. We must go direct to the medical profession and ask their support. We don't want to practice medicine, we want to practice pharmacy. Study of the problem shows that the pharmacist is necessary to mankind and if he is to survive, something must be done to protect him. If the politicians fail to support us, we can elect politicians who will.

Fifth: Pharmacists and particularly hospital pharmacists should write articles to appear in medical and hospital periodicals, emphasizing the work of their departments, and your Chairman would respectfully recommend to this section that preparations be made for this work as part of the program for the ensuing year.

Sixth: The Association could arrange with magazines of a national circulation, such as the *American Magazine*, to interview pharmacists of repute, thereby securing articles of interest and information to the general public, and furthering the public health and public service points of pharmaceutical service.

Seventh: What is good for pharmacists and the public in Massachusetts, is good for pharmacists and the public in California, and likewise in New York, Georgia and Minnesota. Therefore, a committee composed of two men from each state in the Union, selected by the State pharmaceutical associations, should meet at some central point, and assisted by a half dozen of the best legal talent of the nation, should draft model state and national pharmacy laws, which would hold water and not be full of loopholes. Then it might take us ten or fifteen years to get them passed—the national laws at Washington and the state laws through all of the state legislators—but it would be worth while, it would be a definite goal, with satisfaction and comfort at the end. It can be done, it would seem, and if it cannot, we might as well give up entirely.

Your Chairman begs your indulgence for this long address, which he realizes is contrary to the precedent of Chairmen's addresses, but he feels that the time has arrived for constructive and definite action and he craves action.

ABSTRACT OF DISCUSSION.

Charles H. LaWall said this address should go to all pharmacists; it should not be lost because of the few members here. In his opinion a sufficient number of reprints should be made for mailing to all officers of State Associations, all drug journals and colleges of pharmacy with the request that publicity and coöperation be given the plan. He made a motion accordingly and that the matter be referred to the Board of Directors, as to the financial outlay.

Chairman Nitardy asked whether this would come from the Section as a recommendation to the Board of Directors. The mover replied in the affirmative. The motion was carried.

A further motion, which was carried, referred the address for publication.

Chairman Ruth said that the Section should start on a definite program of writing articles for periodicals.

Chairman Nitardy referred to another recommendation of Chairman Ruth's address—that the By-Laws of the Scientific Section be adopted by this Section; he asked whether it was necessary to refer these to a committee. Charles H. LaWall considered this unnecessary and moved that the recommendations be approved. The motion was seconded and carried.

The By-Laws were read section by section; in Section 9, the word "extract" was changed to "abstract," and "scientific interests" was changed to "pharmaceutical interests" in order to make the term apply to this Section. A vote was called for to adopt the By-Laws, as amended, as a whole; it carried.

Report of the Special Committee on Recipe Book was called for, see p. 865, September JOUR. A. PH. A. The report was made by F. W. Nitardy; a motion to adopt and approve the report was made by Charles H. LaWall.—Carried.

Chairman Ruth appointed as members of the Committee on Nominations: *Chairman*, P. Henry Utech, B. E. Höckert and H. M. Faser.

By request of the Chairman, Charles H. LaWall presented notes of two papers to be submitted for publication, on "A New Emulsifying Agent for Volatile Oils" and "Denaturants in Distilled Extract of Witch Hazel;" the co-worker on latter paper is Joseph W. E. Harrisson. Chairman Ruth requested that the contributors complete the papers and send them to the JOUR. A. PH. A. for publication.

A general discussion of the papers was participated in by Messrs. Gray, Krantz, Doran, Walton, Becker, Glover, Gauger, Handy and others.

The emulsifying agent receiving consideration in the first paper is albumen and potassium bitartrate.

In the discussion of the notes on denaturants in distilled extract of witch hazel, the varying costs were brought out, evidencing that pure ethyl alcohol was not invariably used in the preparation. Mr. Doran stated that for the distillation the weight of witch hazel is not given, so it lacks standard. Mr. Walton referred to the Government's viewpoint—classifying witch hazel among toilet articles and not as medicine. Mr. Handy contended that in framing a standard it should be remembered that witch hazel has constituents which have therapeutic value, however minute the quantities they may be essential to its action, and pharmacists should have assurance that the product purchased by them is what the manufacturers allege it to be. Mr. Doran said that correct labeling is the key to the situation.

A paper, by E. F. Kelly and John C. Krantz, Jr., was next read on "An Experiment in Extraction" (see pp. 815–818, September JOUR. A. PH. A.). There was no discussion, but Charles H. LaWall expressed his appreciation of this interesting and scientific study, which throws light on some of the difficulties of extraction.

A paper by Jos. W. E. Harrisson on "The Preservative Effect of Certain Substances on Carrel-Dakin Solution," was read by Charles H. LaWall—see October JOUR. A. PH. A., p. 902.

The following paper was called for and read by the author:

THE A. PH. A. RECIPE BOOK—ITS SCOPE.

BY IVOR GRIFFITH.

The A. Ph. A. Recipe Book was the name originally intended for this compilation of for-

mulas. It has been suggested that the title of the book be changed to the A. Ph. A. Book of Formulas, which is certainly more dignified and less kitcheny than the former title. Yet, it has been criticized because of possible confusion with the National Formulary. This, however, is not likely.

The character of the book in its many aspects is in the hands of certain committees and there is every promise of an excellent final product.

Indeed the mere fact that this Association has planned to assemble and publish this book is proof sufficient of the existent need for such a compilation and the brilliant career of the National Formulary is warrant enough for its ultimate success.

President Arny in his address called attention to the commendable work done by Chairman Lascoff in the compiling and testing of the formulas chosen and in their assembling. It has entailed much unselfish labor and no inconsiderable expense of time and money. The presentation of his final report cannot but reflect the wholesome interest and untiring work which have been his share in the consummation of this great undertaking. The compilation, one might state then, is ready for final consideration, except perhaps in regard to the grouping of formulas, the elimination of repetitive formulas and some other important items of assembling and editing.

There may be a question then and a very pertinent question as to the need for this paper in such a time. In answer it can be stated that the paper is submitted in order to gain some helpful information from members of the section as well as to sustain interest in this important venture of the Association.

This is not the Section on Commercial Interests nor the Conference of Pharmaceutical Faculties where juggling over large figures and small fractions is in the hands of experts, but it is quite pertinent to call to your attention that the A. Ph. A. Formula Book has in it financial potentialities that if properly developed will place in the hands of our directors a valuable source of additional income. The writer while editing the department of questions and answers in a prominent trade journal learned a great deal about formularies or what purported to be formularies. Incidentally, he also learned a great deal about querists. First of all, he learned that the small percentage of pharmacists who send questions to these departments in drug journals are very often lacking in one or two extremely important particulars—they lack thinkeries or they lack formularies. Sometimes they lack both. Lacking a thinkery, a formulary is of no avail and lacking a formulary even brains may fail to bring the answer.

Let us consider a concrete example—A physician walks into a Buffalo drug store and requests a pint of Benedict's Quantitative Sugar Solution. Proficient in the art of procrastination the druggist informs his customer that it will take some time to compound this preparation and offers to sent it around to the office in half an hour. The physician after requesting promptness leaves. Then a frantic search through the U. S. P. where Benedict is still unknown—then through the N. F., then through a dispensatory and finally through a series of formularies of varying degrees of senectitude and shabbiness. His search is fruitless. One old formula book lists Benedictine but not Benedict's. Then he foolishly consults Webster and is chagrined to find that Benedict is there and infers a state of compound blessedness but this does not afford the solution of his problem.

His next step is to call the Buffalo College of Pharmacy only to find that all the professors are attending a convention at the Statler Hotel or else out fishing.

Frantically as the end of the half hour approaches—Benedict's still absent from his mind and Benediction far from his heart—he calls up the physician and tells him that he regrets greatly his inability to furnish him with the promised solution, for the simple reason that he has no idea of what it contains other than sugar.

Now that is only a story—but it is not entirely fanciful, for similar incidents can be quoted from the experience of every practicing pharmacist. The moral of the story is that there are no good formularies available to-day. Yes, there may be secured a great many formularies but they are without exception inadequate. They often have bulkiness and an astronomical multiplicity of formulas but bulkiness and a multiplicity of formulas do not constitute comprehensiveness. One such formulary consulted at random had thirteen recipes for silvering mirrors, forty-eight formulas for dentifrices and three for imitations of castoria, and this fertility of formulas obtained throughout the book.

Previously, reference was made to the senectitude of the collection of formula books gen-

erally available in the drug stores. One can quite as pungently ridicule the senility of some of the individual formulas in more recent editions of these books. To repeat—there is not a single good general pharmaceutical formula published in the United States to-day.

But what constitutes a good formula book? In brief, the following descriptive terms seem to carry the writer's impression of a serviceable and authoritative formula book, such a book as could be sponsored by this Association and be in keeping with its reputation and dignity.

1. Comprehensiveness. 2. Up-to-dateness. 3. Reliability. 4. Availability or accessibility. These terms let us now consider very briefly.

1. Comprehensiveness.—When Dr. Charters is finished with his commonwealth study of pharmacy it will be splendid to have him engage in a tussle with the million and one formulas so that by his special process of elimination he might select for us the thousand prime formulas outside of the official books, then the next thousand of less importance, etc., just as he did with the Latin of the curriculum. He would find in this field a most abundant opportunity for his unique methods of survey. Seriously, however, it must be a most difficult task for the Committee to determine not what must go into this book but what must be left out. Some of the formularies publish many translations from foreign sources, notably the German, as if the mere translation implied worthiness. Such a formula ascribed to Hager called for chloride of potassium in a gargle, obviously a mistake, and was printed next to a similar formula from an American source but which called for the chlorate. Comprehensiveness implies systematic arrangement. The book must be well divided into reasonable parts. One cannot scramble together a collection of good formulas and call the product a good formula book. There must be a system. Therapeutic formulas properly labeled shall be in their own department. Cosmetic formulas elsewhere, formulas for testing solutions, industrial formulas, photographic formulas, etc., all must be in their own place. Only thus can we arrive at a serviceable hand book of formulas.

There must be uniformity of style in writing the formulas—here, if anywhere, will there be a fine field for outdistancing the current formularies. One gazes with amazement at a formula such as this; quoted verbatim from its original source:

Atropine sulfate (1%)	30 minims
Cocaine hydrochloride	3 grains
Solution of epinephrin (1:1000)	30 cc.
Camphor water.....ad	100 cc.

Such examples of hybrid metrologic statements are not earmarks of intelligent editing and their frequent presence in formularies and drug journals is to be deprecated.

2. Up-to-dateness.—This term is self-explanatory and involves the obvious need for revising the formulary frequently in order to keep abreast of the times. An example of senility as well as an example of asininity is seen in the formula which follows:

Syrup of Iodo-tannic acid (French Codex)	℥
Tincture of aconite 1880	10 drops
Syrup of anise, to make	℥i

The senility is reflected in the second item and the asininity in the first, for nowhere in the formulary was there a formula for the first ingredient.

3. Reliability.—Our formula book will have in it no formula that cannot be assembled. That is a broad statement to make. Judging from the impracticability of some formulas which we have seen in the books one cannot help coming to the conclusion that they are the work of armchair wielders of graphite on cellulose. It seems well assured, however, that none but worthy formulas will find a place in the A. Ph. A. Formula Book for the compoundability of every formula has been tested in the laboratory of the chairman. That is a most commendable feature of his management of the book. Reliability, however, is a broader term than one might imagine, as it infers the reliability of the finished preparation as well. And yet this might be said to be quite far from the province or possibility of this book; nevertheless, there is a margin of interest that can be displayed in this direction. To illustrate there is quoted herewith a formula taken from a list recently submitted to the Chairman. Needless to say it will be deleted.

Castor oil	3 Gm.
Powdered altheae	
Soap, to make	100 pills

Each pill would accordingly contain about half a drop of the exquisite grease, surely a quantity not calculated to disturb the equanimity of the peristaltic machinery. Reliability of formula also involves a reliability of working directions and these must be furnished in every possible case.

4. Availability or Accessibility.—This is a problem of editing. It involves a good arrangement of the formulas, good indexing and cross indexing, good printing and good form. It also involves availability from the standpoint of price. The book must be moderately priced in order to find a market for the later revisions.

There are many more things that might be said in regard to the book; there is the question of ethics. Questionable formulas must be omitted. Distinctly therapeutic titles such as heart-tonic pills or blood purifier should be avoided. Blatant copies of proprietaries shall be left out. The legal aspects of formulas must be closely scrutinized. But why go on, for these matters are undoubtedly in safe hands and it can be quite properly stated that when the book finally emerges from its long and tedious period of formation, it will be found useful, virile and correct and a credit both to its compilers and to its sponsors.

The importance of classification was stressed by Charles H. LaWall. Chairman Ruth referred to an experience he had with a formula that had become misplaced, by which he emphasized the need and usefulness of a reliable Recipe Book.

A new method for making emulsions was described by Henry G. Ruenzel (see p. 871, September JOUR. A. PH. A.).

THE A. PH. A. BOOK OF FORMULAS.

Chairman Leon Lascoff, of the Committee on Unofficial Formulas, presented an illustrated report; about 500 preparations made according to formulas submitted and printed were on exhibition during convention week; for further elucidation and additional references he had with him about 150 lantern slides, many of which were shown. Before explaining different preparations, he referred to the publication of Formulas in the JOURNAL A. PH. A., which can be traced by reference numbers in the heading of this division in the JOURNAL (see October issue, pp. 975–977, and index of preceding volumes).

An address by the Chairman printed in the April (1924) JOURNAL and presented before New York Branch, A. Ph. A., embodies the main points brought to the attention of the members by Chairman Lascoff. He gave an account of the number of formulas published, the sources, list of deletions from U. S. P. that have not been included in the N. F. under revision. The Chairman's activities were cited, the number of bulletins issued, the reports made at A. Ph. A. Branch meetings and heretofore published.

A comprehensive index of preparations was prepared by the Chairman and exhibited by him; the cross references make it possible to find quickly the formula for any of the preparations. This work, like other activities, evidenced the deep interest of the Chairman. The formulas are typewritten on slips which fit into the book and these are designed also for use by contributors of formulas, carrying all essential information relative to the preparation and history, in so far as this is obtainable.

Chairman Lascoff stated that he had appointed a Committee on Scope, composed of Messrs. Griffith, Fischelis, Scoville, Wimmer and Hilton. He recommended that the book be called the "A. Ph. A. Book of Formulas," and that, when published, it should include three divisions: Pharmaceutical formulas, non-pharmaceutical preparations or specifications and hospital formulas. So far 1503 formulas had been considered, of which 630 are for pharmaceuticals, 171 for toilet and related preparations, 38 for the soda fountain, 25 photographic formulas, 16 for flavorings, 354 hospital formulas, 85 for household remedies, 10 veterinary formulas, 25 for reagents, and the remainder deletions from the U. S. P. and N. F.

Chairman Lascoff stated he had received a number of letters from interested persons, here and abroad, asking when the Book would be completed. He felt that his assignment was that of compiling the formulas and the editing of the Book should be done by some one experienced in such work and recommended the appointment of an editorial committee.

He thanked all who had aided him in his work.

Chairman Ruth invited discussions which would be helpful for the Chairman and his co-workers in completing the Book.

H. V. Arny moved that a rising vote of thanks be given the Chairman and his associates. H. L. Meredith considered that nearly all the work had been done by the Chairman. The vote carried unanimously.

I. A. Becker spoke as Chairman of the Committee on Photographic Formulas—he selected the formulas with the thought in mind to make the preparation of developing, reducing solutions, etc., and the sale thereof a source of profit for the pharmacist.* He thought that in addition to the formulas references to other formulas should be included. Chairman Lascoff said there was a chapter given over to this subject.

Charles H. LaWall moved that the Section join in the recommendations made by President Arny in his address and refer action on the Book of Formulas to the Council. The motion was seconded and carried.

The first session of the Section was then adjourned.

SECOND SESSION.

The second session of the Section on Practical Pharmacy and Dispensing was convened at 1: 40 P.M., August 29, by Chairman Robert J. Ruth; F. F. Berg acted as Secretary.

Reading of papers was the first order of this session. (Abstracts of discussions will be printed with papers as they are published and omitted from the minutes; titles and names of authors only are given.—Editor.)

"Branches of the American Pharmaceutical Association in Schools of Pharmacy," by E. V. Kyser.

"A Hospital Pharmacy," by Henry J. Goeckel.

"The Hospital Pharmacist's Opportunities to Advance Pharmacy and to Aid in the Attainment of Therapeutic Success," by Henry J. Goeckel.

"Hospitals in China" (read by Chairman Ruth), by Harvey V. Stokeley.

"Why Botany and Pharmacognosy," by William J. Stoneback.

"Some Observations on Glycerin Suppositories," by Wilbur L. Scoville.

The foregoing paper was published in September JOURNAL, p. 818. There was no discussion except in so far as the difference was noted between manufacture in the pharmacy, where local conditions only had to be considered, and manufacture of suppositories that may be stocked for a time and then shipped to sections where climatic conditions differed. And also it was noted that the making of suppositories was more or less a specialized art. Messrs. Berg and Kebler expressed the foregoing and also an appreciation of the paper.

J. Leon Lascoff exhibited a Chinese pill, about the size of a "moth-ball;" the outer covering was of paraffin; inside of this the pill proper, wrapped in a paper on which the directions for use were given. The speaker thought similar application might be made omitting the directions inside—perhaps for some remedials, instead of gelatin coating; he was not prepared to make any further suggestion; he hoped to bring along specimens of special forms of dispensing, as practiced in other countries, next year.

"Further Reports on a New Mercurial Poisoning Antidote," by William A. Hall.

"Our Pharmaceutical Conventions—Why We Should Attend Them," by Frances M. Greenwalt.

"Temperature Effects in Making, Diluting and Keeping the Carrel-Dakin Type of Hypochlorite Solution, including the Proposed U. S. P. Formula," by Irwin A. Becker.

"What Is a Modern Drug Store?" by F. W. E. Stedem.

"Pharmacy—Then Let Us Be Pharmacists," by John C. Krantz, Jr.

"The Use of Silica-Gel as a Clarifying Agent," by E. V. Howell.

"Extraction of Nux Vomica," by J. A. Pierce.

"Dispensing and Dispensary Practice for Students," by Frederick J. Wulling, published in October JOURNAL, p. 923.

"The Importance of Physical Characteristics in Pharmaceuticals," by Caswell A. Mayo and George E. Ewe.

"Sweetening Effect of Ammonia on Fluidextract of Licorice," by F. F. Berg—published in September JOUR. A. PH. A., p. 814.

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* See JOUR. A. PH. A., volume VI, p. 194; volume VIII, p. 829; volume XI, p. 551.

Arno Viehoever inquired for how long the preparation had been under observation and whether the organoleptic tests were made with freshly prepared products or after standing. The author replied that tests had been made with both; that this experimentation was the wind-up of a long series of experiments.*

The paper by Edward Swallow on "The Status of the Hospital Pharmacist," was read. The following papers were read by title:

"Should Our Definition for Sugar be Broadened? If So, Why?" by L. E. Sayre. This paper is printed in the October JOURNAL, p. 909.

"Opportunities for Qualified Pharmacists in U. S. Government Service; with Comments on Narcotics and Alcoholics," by Cornelia Cunningham.

"Drug Store Management," by A. T. Maier.

"Why Are Hospital Pharmacists Considered Jacks at All Trades?" by Cornelia Cunningham.

P. Henry Utech moved that the papers read by title be referred for publication; the motion was seconded and carried.

Mr. Utech reported as Chairman for the Committee on Nominations, as follows:

Chairman, John C. Krantz, Jr., Baltimore; *Secretary*, F. J. Blumenschein, Pittsburgh; *First Vice-Chairman*, Miss Frances M. Greenwalt, St. Paul; *Second Vice-Chairman*, to be selected by Council; *Delegates to the House of Delegates*, Robert J. Ruth.

Because of the new ruling under the By-Laws no *Second Vice-Chairman* is named; the Committee is of the opinion that this officer should reside in the next convention city.

Henry G. Goeckel moved that the nominations be closed; seconded and carried.

Caswell A. Mayo moved that the Secretary be instructed to cast one ballot for the nominees named; seconded and carried.

The officers-elect were then duly installed and they expressed appreciation of the honor conferred on them.

A rising vote of thanks was tendered the retiring officers.

Henry G. Goeckel inquired whether any effort had been made to associate with the American Hospital Association.

Past Chairman Ruth stated that Miss Greenwalt was affiliated with the organization of hospital pharmacists and will make an investigation and report at the Des Moines meeting. It was so moved and seconded by Arno Viehoever.—Carried. On motion, seconded and carried, the Section adjourned.

(Minutes of other Sections will follow in a succeeding issue.)

COMMITTEE CHAIRMEN OF NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

Chairmen of the various committees of the National Wholesale Druggists' Association have been appointed by President Sewall D. Andrews, as follows: Credits and Collections—W. W. Gibson, Albany, N. Y.; Delivery and Traffic—Wm. Jay Schieffelin, Jr., New York City; Drug Markets—John F. Belsterling, Philadelphia; Educational—A. Kiefer Mayer, Indianapolis; Insurance—Roy M. Johnston, Fort Smith, Ark.; Legislation—C. Mahlon Kline, Philadelphia; Memorials—Harry J. Schnell, New York City; Proprietary Goods—Henry D. Faxon, Kansas City; Quality of Medicinal Products—P. E. Anderson, New York City; Rates and Routes—Romaine Pierson, New York City; Special Lines—J. M. Penland, Waco, Texas; Trade-Marks—Frank A. Blair, New York City; Uniform Accounting—Sewall Cutler, Boston; Local Associations—W. E. Greiner, Dallas; Membership—C. J. DeWoody, Dallas; Prohibition Problems—Wm. Jay Schieffelin, New York City; Special committee to confer with Department of Commerce on Simplification—H. H. Robinson, Baltimore, *Chairman;* Walter V. Smith, Philadelphia; Harold D. Cowan, Buffalo.

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* Other references are made to JOUR A. PH. A., volume VII, p. 958; volume IX, p. 307; volume X, p. 688; volume XII, p. 432.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Members of the Council, A. PH. A.: JAMES H. BEAL, *Chairman;* S. L. HILTON, *Vice-Chairman;* ROBERT P. FISCHELIS, *Secretary;* CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, CHARLES E. CASPARI, W. L. SCOVILLE. *Ex-Officio:* CHARLES W. HOLTON, President; Vice-Presidents, PAUL S. PITTENGER AND WILLIAM MANSFIELD; WILLIAM B. DAY, Secretary; E. F. KELLY, Treasurer; W. BRUCE PHILIP, Chairman of the House of Delegates; Editors of the JOURNAL and YEAR BOOK. Committee on Publications: R. P. FISCHELIS, *Chairman;* H. V. Arny; PAUL S. PITTENGER; E. F. KELLY; WM. B. DAY; A. G. DUMEZ; E. G. EBERLE.

Collaborators: The members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. Ph. A.: PAUL S. PITTENGER, WILLIAM MANSFIELD, JOHN C. KRANTZ, JR., R. S. LEHMAN; W. BRUCE PHILIP, Chairman of the House of Delegates, A. Ph. A.; W. H. Zeigler, President A. C. P. F.; CHARLES B. JORDAN, Chairman Executive Committee, A. C. P. F.; H. LIONEL MEREDITH, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

PHARMACY HEADQUARTERS CAMPAIGN COMPREHENSIVE AND NATIONAL IN SCOPE.

With the approval or endorsement of all associations of the drug industries and pharmacy in general the Headquarters Campaign of the American Pharmaceutical Association interests all divisions of pharmacy and with that assured "assurance is made doubly sure."

There are several aids to the cause that have not been fully made use of—one, that of the ever-wide-awake traveling representatives, whose business is to sell, and they can and will sell the proposition more extensively than heretofore—every one of their patrons is a prospective subscriber to the Fund unless already on the list of subscribers and then he becomes an aid in presenting the proposition to others. There is another source—those who sell to pharmacists will gladly contribute, and cheerfully, because whatever helps their patrons increases patronage; a number of donations were reported from manufacturers who had read of the project in newspapers; several had heard radio talks by Dean Wulling. These references are cited for others to follow the lead and develop new prospects. Some of the earlier subscribers did not comprehend the full meaning of a Pharmacy Headquarters when they first sent in their subscriptions and have now increased the amount, in some instances ten-fold. The "Outward Visible Signs" represent to the public the pharmacists' interest in the profession—complete the Pharmacy Headquarters fund.

POPULARIZING THE PHARMACIST.

It is only by keeping everlastingly at it and by the coöperation of the many that the rightful claims of pharmacy will be impressed on the public. The country sympathizes with the people of Los Angeles and hopes that the plague will be under control in a very few days. It is unfortunate that many of the newspaper items have exaggerated the facts, and this is said with full realization of the seriousness of the situation. Pharmacy suffers so frequently from misstatements—at times by those who should be very careful and the last to do injustice—that our sympathy goes to the injured and resentment for the wrong seeks expression.

The point it is desired to make is that pharmacists, who were at one time retail pharmacists, render a service in times of such distress which is not given full significance. Those who apply the remedial and even the quick method of its conveyance receive due recognition for service—"there is glory enough for all." For a long time the serum had to be in readiness for an outbreak that these very pharmacists hoped would never come. Pharmacy has a life-saving mission, and also serves in other ways for the protection of the people.

Possibly, under the condition of things, there is no infliction or affliction which pharmacists suffer less willingly than being compelled to supply alcoholic beverages. Their willingness to accept the responsibility is responsive only because it is a service for the sick. And, still, the burden is sometimes made more unbearable by misrepresentation in news items,

of an occasional offender in the ranks or in a related profession. Without desiring to promote the business interests of Mr. Charles H. Eyles—who so ably brought to the attention of the press the misuse of the word "drug," and who now resents the publicity given to an erroneous and reprehensible statement made regarding the dispensing of alcoholic beverages by pharmacists, an expression of appreciation is timely and proper.

The laity should realize what pharmacists are endeavoring to do by protecting them against those who misuse their privileges for gain in such dispensing. In turn, and to protect themselves, the people should refuse to give patronage to those who do not respect pharmaceutical ethics, and give support to those who serve honestly and with due professional regard.

Pharmacists should resent the publication of an article in the September issue of *Physical Culture* entitled "The Truth About the Drugs I Sell." The writer states he has been in the retail drug business for twenty-five years and has now awakened to the enormity of his offense against society in recommending and selling drugs. The *N. A. R. D. Journal* has rendered a distinct service by its editorial in its issue of October 30. We quote the introduction comment (italics ours) in *Physical Culture* to the article referred to; it seems to us the sincerity of the writer and of the publication may be questioned by some readers: "Obviously, the name of the druggist whose confession appears on these pages must be withheld. He is *still* in business and naturally does not wish to have his identity revealed until he is able to find some vocation which will allow him to support his family and *satisfy* his conscience. He has *always been fair* in his dealings and reasonable in his prices, and, consequently, he is not so situated, financially, as to be able to retire at this time. His store is on Staten Island, New York, and enjoys the patronage of the leading citizens of the community. For years he has had the respect and confidence of his many patrons and the professional men with whom he has come in contact. This is not the wail of a man who has failed. It is the frank confession of a man who has made a *success* of his business, but whose *honest convictions* and intelligent observations have brought him to a point where he could *no longer conscientiously continue.*"

Each individual has an opportunity in his own community to correct misinformation relating to pharmacy.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued three bulletins of the Drug Trade Bureau of Public Information, namely, B-35 to B-37. The first bulletin presents statistics of the drug industries in abstract, as prepared by the Secretary, Charles H. Waterbury, of the National Wholesale Druggists' Association. All of these statistics have interest and value. In 1850 there were 6,139 apothecaries and druggists. In 1924 there were 49,000 dealers in drugs and chemicals and pharmacists. In 1880 there were less than 100 pharmaceutical manufacturers, and in 1924 the number is 400. The development in special lines has been considerably greater. The number of different proprietary articles sold aggregates more than 50,000.

Bulletin B-36 relates to the action of the American Drug Manufacturers' Association in opposing the Cramton Bill, and Congressman Lewis C. Cramton has been advised that the Association will use every reasonable means at its command to defeat the present measure.

Bulletin B-37 abstracts some of the remarks made by John W. Gamble, an Omaha banker, before the National Association of Retail Druggists. In his opinion the retail salesmen of this country are not as aggressive as those of Great Britian. He contends that the retailer of the future must operate along somewhat different lines, and in his transactions must take into consideration the peddler—using the term in a broad sense. "The position occupied by the retailer is rather unique," he says, "he is the one link in the chain of distribution that assembles merchandise and waits for people to come and buy."

No doubt, the reasoning of Mr. Gamble is well founded, but there is no question that the merchandising ability of the retailer is developing and he is, more than ever before, utilizing the value of advertising in his business.

PERSONAL AND NEWS ITEMS.

An emergency medical corps has been organized in Philadelphia by Director of Health, Krusen, who refers frequently to his experience as pharmacist before he graduated in medicine. The corps will volunteer service during epidemics and other emergencies; 1126 physicians have signed up; pharmacists and nurses are members of the auxiliary corps.

Miss Mary Jay Schieffelin, daughter of our fellow member Dr. William Jay Schieffelin,

New York City, and Charles S. Brown, Jr. of New York City and Mt. Kisco, N. Y., were married October 30, at the Madison Avenue Presbyterian Church, by the Rev. Henry Sloane Coffin.

Dr. Harvey W. Wiley observed his eightieth birthday anniversary October 18, by working just a little harder and walking just a little farther than usual.

Doctor Wiley walks at least five miles daily, with a vigor in his stride that belies his four-score years. He takes eight hours of sleep, and rises daily at 5 o'clock.

Mrs. Joseph P. Remington has donated to the historic collection of the Philadelphia College of Pharmacy and Science, two indentures—one of John Hart, dated 1787; author of Jacob Carver, dated 1747. The former was the grandfather of the late **Professor Joseph Price Remington** and the latter his great grandfather. John Hart was indentured to Townsend Speakman, prominent pharmacist of his day in Philadelphia.

Miers Busch has been reëlected Vice-President of Pennsylvania Salt Mfg. Co., and an active officer of it.

Theodore J. Bradley and **Charles J. Clayton** are sketched in the October number of the *Druggists Circular*.

Edward Kremers is contributing a "Flückigeriana" to the *Apotheker Zeitung*. F. A. Flückiger visited in the United States in 1894, as guest of the late Dr. E. R. Squibb.

Honorary Member **Prof. Herman Thoms** concludes an account of his world tour, during which he visited in the United States, in the *Apotheker Zeitung*.

E. E. Stanford, who studied at Harvard for a year, has returned to his duties in Western Reserve University, as head of the department of Pharmacognosy.

Lee M. Pedigo is Chairman of a Chicago committee to seek funds for a building near University of Illinois for the students of the pharmacy, medical, and dental departments. The lot has been donated.

Hans W. Vahlteich is now research Chemist of the American Linseed Company, New York City.

A. Gawalowski, frequently quoted in the YEAR BOOK, recently celebrated his 75th birthday.

F. A. Milne, President of Kansas Pharmaceutical Association, is President of the Chamber of Commerce of his home city.

William Votteler, Louisville, was recently appointed by Governor Fields as a member of the Kentucky Board of Pharmacy for a five-year term to succeed Dr. Linwood A. Brown, Lexington, whose term expired Oct. 1.

Lawrence C. Lewis, of Tuskegee, has been appointed by the Governor of Alabama as a member of the State Board of Pharmacy to succeed himself.

Frank S. Ward, secretary of the Oregon State Pharmaceutical Association and the Oregon Board of Pharmacy, was seriously injured when run down by an automobile.

OBITUARY.

JOSEPH C. ROBERTS.

Joseph C. Roberts, member of the American Pharmaceutical Association, and for 16 years superintendent of the laboratories of Sharp and Dohme at Baltimore, died October 15, age, 58 years. Last January the death of John A. Roberts, a nephew, was recorded in these columns. The deceased had been in poor health for some time. He was buried at his old home in Philadelphia, and the funeral was attended by the heads of various departments of Sharp and Dohme, including Secretary and General Manager William A. Sailer.

Mr. Roberts was a graduate of the Philadelphia College of Pharmacy. He is survived by three daughters and one son.

IN MEMORIAM.

The passing of Edward Clarence Bent, of Dell Rapids, S. D., deserves more than a mere necrology record in the A. Ph. A. archives. Mr. Bent was for nearly half a century a consistent and persistent advocate of all which meant the betterment of pharmacy, local, state and national. He attended many annual meetings of the American Pharmaceutical Association but was never conspicuous in the debates and was quiet and retiring in disposition. His influence, however, was far-reaching, for he had influenced soberly and advisedly. While I was treasurer of the A. Ph. A., I became best acquainted with his widespread influence in South Dakota.

HENRY M. WHELPLEY.

Howard Barclay French, for nearly a half century President of the Philadelphia College of Pharmacy and Science, and sole member of Samuel H. French & Co., Philadelphia, died October 16. Mr. French was a civic leader and

served many organizations in various official capacities; he took an active part in affairs and was a member of a number of clubs. His activities were so extensive that an enumeration of them would require a page or more. He compiled the genealogy of the descendants of Thomas French, 1639–1913, comprising two large volumes. Mrs. French died about a year ago; he is survived by a daughter, Mrs. Edgar S. McKaig. The deceased was born September 3, 1848. An introductory of a typical editorial, commenting on the life of Mr. French, is the following:

"If Philadelphia had more citizens with the interest in public affairs displayed by the late Howard B. French, it would be a much better governed community. Too many successful well-to-do men are politically indifferent. They let the men who are expert in nothing but political manipulation run the city and then complain about the result. Mr. French complained about the result and did what he could to change the conditions."

Mr. French graduated from the Philadelphia College of Pharmacy in 1871.

E. H. Gingrich, for many years a pharmacist at Lebanon, Pa., died October 10. His widow is to have the increment of the estate, valued at $100,000; after her death it is to be used for the erection and maintenance of a public bathing pool and recreation grounds.

The death of the widow of the late Herman Frasch a month or more ago, in Paris, recalls the fact that her distinguished husband was an assistant to and co-worker with Prof. John M. Maisch, and applied pharmaceutical methods in his great achievements. The Louisiana and Texas sulphur mines, far below surface, are successfully mined by such a practical application and the earlier separation processes for paraffin were likewise pharmaceutical. The United States is not dependent on other countries for sulphur, because of the Frasch Method.

The income of the Frasch estate, estimated at about 5 million dollars, will be used for "research in the field of agricultural chemistry with the hope of attaining results which shall be of practical benefit to the agricultural development of the United States."

SOCIETIES AND COLLEGES.

OMISSION OF NAMES OF NORTH DAKOTA DELEGATES TO HOUSE OF DELEGATES, A. PH. A.

Inadvertently the names of the delegates from North Dakota to the House of Delegates were omitted. All of these delegates were present and the names appeared on the registration list of the September issue, but not in the list of delegates on p. 950 in the October number. The names were properly recorded by the Secretary of the House of Delegates; they are: Ray Stinson, Pembina, voting delegate; W. P. Porterfield, Fargo, and W. F. Sudro, Agricultural College. The omission is regretted and thanks are extended to Mr. Stinson for directing attention to the same.

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

Dr. C. A. Browne, chief of the Bureau of Chemistry, was elected President of the Association of Official Agricultural Chemists at the close of the 40th annual convention of that organization, October 22, held in Washington. A feature of the meeting was the discussion of chaulmoogra oil in the drug section. L. E. Warren, of Chicago, led the discussion of this subject. The convention received and approved a report submitted by Dr. L. F. Kebler of the bureau of chemistry, Agricultural Department, from the committee to coöperate in revision of the U. S. Pharmacopœia. R. E. Doolittle, Chicago, the retiring president, is chairman of the committee for revising the book of methods of analysis used by members of the organization, now being published. Dr. Harvey W. Wiley, former chief of the Bureau of Chemistry, was the guest of honor at a dinner, when he was presented with a bronze medallion bearing a relief portrait of himself.

INCORPORATION OF CANADIAN PHARMACEUTICAL ASSOCIATION.

The incorporation under a federal charter of the Canadian Pharmaceutical Association, recently secured, fixes the head offices at Toronto. The incorporators include John Hargreaves and Frederick A. Jacobs of Toronto; John E. Tremble of Montreal; Burwell Griffin of Hamilton; William J. M. McMullen of Kerrobert, Sask.; George A. Burbridge, Halifax, N. S.; Harry D. Campbell, Winnipeg, and others representing all parts of Canada.

The objects are to advance the science and practice of pharmacy, to promote the mutual

interests of all societies and colleges, and their members; and to bring the members of the profession together in commercial and social gatherings.

A WOMEN'S MEDICAL, DENTAL AND PHARMACEUTICAL ASSOCIATION.

Members of the Women's Medico-Pharmaceutico-Dental Association, Manila, P. I., are coöperating in the José Rizal Memorial Stadium drive. The interest in the news item is chiefly in the coöperation of these medical activities.

CHICAGO VETERAN DRUGGISTS' ASSOCIATION.

A souvenir of a recent Round Table of the C. V. D. A. presented on a card the history of this fraternal organization. It may well be questioned whether any association practices more faithfully the precepts which bind a fraternity. Because the members are well and favorably known to pharmacy and as an encouragement for like organizations elsewhere, the history is reprinted:

On June 21, 1898, twenty-one of the old-time druggists of Chicago were entertained at a dinner at the Bismarck Gardens and a tally-ho ride through the parks by T. N. Jamieson. That entertainment was the beginning of the Chicago Veteran Druggists' Association. On that day each guest was decorated by Mrs. T. N. Jamieson with a red carnation. On each June 21, the Veterans are the guests of T. N. Jamieson at a dinner and entertainment, and on each occasion the members are decorated with a red carnation from Mrs. Jamieson. Therefore the host of the C. V. D. A. is T. N. Jamieson; the patroness, Mrs. T. N. Jamieson; the emblem, the red carnation.

The Presidents from 1898 to 1924 were as follows: 1898, E. O. Gale; 1899, E. H. Sargent; 1900, J. C. Barclay; 1901, Wm. Jauncey; 1902, A. E. Ebert; 1903, Wm. Blocki; 1904, Henry Biroth; 1905, Louis Woltersdorf; 1906, T. H. Patterson; 1907, O. H. Fuller; 1908, O. H. Fuller; 1909, C. W. Grassly; 1910, W. K. Forsyth; 1911, T. N. Jamieson; 1912, F. Schroter; 1913, O. G. Hottinger; 1914, Chas. Storer; 1915, Andrew Scherer; 1916, Theophilus Schmid; 1917, Herman Fry; 1918, F. M. Schmidt; 1919, Frank Schrage; 1920, E. Von Hermann; 1921, R. E. Rhode; 1922, J. E. Grubb; 1923, J. F. Forbrich; 1924, C. E. Matthews. At the close of O. F. Fuller's two terms as President, he was made Honorary President for life.

The permanent officers are: Corresponding Secretary, John Blocki; Recording Secretary, Wilhelm Bodemann; Assistant Corresponding Secretary, E. Von Hermann; Assistant Recording Secretary, Theophilus Schmid.

THE COMMONWEALTH STUDY OF PHARMACEUTICAL EDUCATION.

BULLETIN NO. 1.

This is the first of a series of twelve monthly statements to be issued by the staff conducting the Commonwealth Study of Pharmaceutical Education, to acquaint the profession with the progress of the study which purports to develop what a prospective pharmacist should be taught.

So many of those who are interested in the progress of the study of Pharmaceutical Education that is being conducted by the Commonwealth Fund have admitted their lack of information on the source and purposes of the Fund that it was deemed advisable in the first Bulletin on the progress of the study to briefly outline the history of the Fund.

The Commonwealth Fund is a charitable corporation formed under the membership corporations law of the state of New York in 1918. It had its inception in the offer of a gift of $10,000,000 from Mrs. Stephen V. Harkness. By subsequent gifts from Mrs. Harkness the fund has been increased to approximately $20,000,000.

The major activities of the Commonwealth Fund are: 1. In the field of Child Health, where a series of demonstrations are being conducted under the authority and supervision of the Child Health Demonstration Committee. 2. In the carrying out of a program for the Prevention of Juvenile Delinquency. 3. In the encouragement of Educational Research.

The committee having in charge the last-named division, under which the study of pharmacy is being made, is composed as follows: Chancellor S. P. Capen, *Chairman*, University of Buffalo; L. D. Coffman, President, University of Minnesota; Charles H. Judd, Chicago, Illinois; J. C. Brown, State Teachers College, St. Cloud, Minn.; W. W. Charters, University of Pittsburgh; J. W. Gwinn, New Orleans; A. B. Meredith, Connecticut; Henry Suzzallo, President, University of Washington; Will C. Wood, California.

The Committee assumed at the outset that there was need of greater economy of time in the educational process, and forthwith set out to test the validity of this assumption by three separate studies. One was to be a detailed

study of the instruction offered in grades five to nine in twelve representative cities. A second was a study of the aims and procedures of a number of representative colleges of arts and sciences and the third was to be an analysis of the preparation needed for one profession. The profession of pharmacy was chosen. The committee requested Prof. W. W. Charters of the Carnegie Institute of Technology, now the University of Pittsburgh, to undertake a study of the information, skill and traits necessary to carry on successfully the practice of pharmacy. Dr. Charters began devising a technique for this study early in 1923 and the work has been progressing steadily toward its completion by October 1, 1925.

OFFICERS ARIZONA PHARMACEUTICAL ASSOCIATION.

President, W. McCann, Tucson.
Vice-President, J. Vestal, Sommerton.
Secretary, A. G. Hulett, Phoenix.
Yuma was selected for the 1925 Convention.

OFFICERS IDAHO PHARMACEUTICAL ASSOCIATION.

President, R. P. Cutting, Weiser.
First Vice-President, Charles Boring, Buhl.
Second Vice-President, John E. Holmes, St. Anthony.
Third Vice-President, A. E. Annis, St. Joe.
Treasurer, Glen S. Maddux, Gooding.
Secretary, T. M. Starrh, Boise.
Assistant Secretary, O. K. Nickerson, Boise.
Pocatello was selected for the 1925 Convention.

IOWA ASSOCIATION PLANS FOR DISTRICT MEETINGS.

A district meeting of Iowa Pharmaceutical Association was held in Burlington, November 6; ten other district meetings are planned and the programs for them are in charge of J. W. Slocum, secretary of the association and a member of the Iowa State Pharmacy Commission, together with Jos. R. Sutter of the Churchill Drug Co., an executive committeeman of the association. The annual meeting of the association will be held in Des Moines in February.

MARYLAND SUBSCRIBES $40,000 TO A. PH. A. HEADQUARTERS FUND.

According to an announcement made by R. E. Lee Williamson, chairman of the Maryland committee named to raise funds for the $1,000,000 permanent headquarters for the American Pharmaceutical Association, $40,000 has been subscribed or contributed in this State. This exceeds by about $10,000 the highest expectations as to the limit likely to be secured which were entertained for a time and leaves Maryland in a position far up in the line among the States with respect to the amount raised in proportion to population. The committee now feels hopeful of bringing the aggregate up to $50,000 at least.

REGISTERED PHARMACISTS' ASSOCIATION OF VIRGINIA.

J. D. Coleman, of Norfolk, Va., has been chosen Secretary of the Registered Pharmacists' Association of Virginia, with headquarters at Norfolk. Robert L. Booker was chosen Vice-President of the association for Richmond, under the new plan, which calls for the elimination of all branches, with Dean Wortley F. Rudd, of the Medical College of Virginia, and W. H. Hoover as local directors. Richmond members of the association will hold quarterly meetings.

INDIANA PHARMACEUTICAL ASSOCIATION COMMITTEE TO VISIT SCHOOLS.

At the last annual meeting of the Indiana Pharmaceutical Association a committee was appointed to visit the Indiana pharmacy schools and report the condition of pharmaceutical education in the State. This committee is made up of Joseph Weis, of Hammond; Herman Bill, of Ft. Wayne; Frank Best, of Lafayette; W. C. Oren, of Indianapolis; and Scott Kelly, of Gaston. Mr. Kelly is President of the association, and Mr. Oren is the Secretary.

A conference has been held for considering plans for providing a new pharmacy building for Purdue University.

CENTENARY OF THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.

An interesting program was provided for the celebration of the Centenary of the Medical College of the State of South Carolina, November 12 and 13.

Early American scientists did not specialize and their course in life was not invariably smooth; Priestley seems to have ended his troubles, as far as law developed them, when he came to the United States. His friend Thomas Cooper, however, was constantly in trouble, even up to the time of his resignation as

President of South Carolina College. For a time Priestley and Cooper shared a home in Northumberland, Pa. Cooper's name does not appear on the list of Oxford Graduates—he balked at reciting the creed and refused to subscribe to the Thirty-nine Articles. Priestley was a preacher. Cooper attacked the Administration of President John Adams; he was tried under the Alien and Sedition Acts, received a 6 months' imprisonment and was fined $400. This was not his only conflict with law. Later, he became professor of chemistry in Dickinson College, University of Pennsylvania, University of Virginia, South Carolina College; all along the line he experienced troubles for opinions' sake. In 1834, he resigned as President of the latter institution and from then to the time of his death was engaged in editing and publishing the statutes of South Carolina. He was judge, scientist, author, editor.

POPULAR SCIENTIFIC PUBLIC LECTURES.

Popular scientific lectures—open to the public at the Philadelphia College of Pharmacy and Science—for November and December, are as follows: "Chemistry in and about the Home," by Prof. Freeman S. Stroup. November 20th Dean J. W. Sturmer will speak on "Chemistry and Color." The lecture on December 4th will be given by Ralph R. Foran on "The Mineral and Vegetable Resources of the Sea"; Dean Charles H. LaWall will speak on "The Romance of Chemistry," December 18th.

THE PHARMACIST AND THE LAW.

GOVERNMENT ACTION TO RECOVER PATENTS BEFORE APPEALS COURT IN PHILADELPHIA.

The effort of the U. S. Government to recover German dye patents seized during the war and sold to the Chemical Foundation, Inc., has been brought before the United States Circuit Court of Appeals in Philadelphia.

SENTIMENT GROWING IN OHIO FOR DISCONTINUANCE OF SALE OF ALCOHOLICS IN PHARMACIES.

A survey just completed by the Ohio Pharmaceutical Association, according to Secretary Theo. D. Wetterstroem, shows that sentiment is growing among the druggists of that State in favor of discontinuing the sale of alcoholic liquors and leaving the dispensing of liquor entirely in the hands of the government. Agitation in favor of government dispensaries is deterred by the belief that they are not practicable, this belief being based on the results of experiments made by a southern state a few years ago, and also because their establishment might lead to the creation of another department of the government with its attendant expense.

Members of Ohio Board of Pharmacy are making preparations for the 3-year pharmacy course as prerequisite for State Board examinations.

NEW JERSEY BOARD OF PHARMACY APPROVES THREE-YEAR COURSE.

The New Jersey Board of Pharmacy has adopted the requirement of a 3-year course in pharmacy as a prerequisite for State Board Examinations, to become effective in 1925.

FIGHTING THE FAKES.

The Missouri Board of Pharmacy has started a campaign to rid the state of Missouri of fake drug stores. The first stroke yielded fifteen criminal indictments against the fakers. The federal and state prohibition and anti-narcotic squads are coöperating with the board, because it has been found that these saloonists posing as druggists violate every sort of a law that stands in the way of their getting the people's money. The Kansas City Retail Druggists' Association is doing its full part in helping to secure evidence and in bringing pressure to bear wherever it will help to effect a thorough cleaning-up of the drug-store situation. A number of licenses have been revoked.

AMERICAN DELEGATION TO THE NARCOTIC CONFERENCE IN GENEVA.

Representative Stephen G. Porter will again head the American delegation to the International Conference for the Control of Narcotics which is now meeting in Geneva, Switzerland. Other members of the delegation are: Bishop Charles E. Brent of New York, Dr. Rupert Blue, Mrs. Elizabeth Washburn Wright, and Edwin L. Neville.

The conference, under the auspices of the League of Nations, opened November 3; this was a precursor to the conference now in session. The United States was represented at the former by Edwin L. Neville, as spectator;

the nations participating are: Great Britain, China, France, India, Japan, Holland, Portugal and Siam. Sao-Ke Alfred Sze, Chinese Minister at Washington, represented China. M. Van Wettum, of Holland, President of the league's advisory committee on the traffic in opium, was elected President of the conference, while Prince Charoon, Siamese Minister at Paris, was elected Vice-President.

On November 3, the Chinese delegation received a cablegram from the Chinese national anti-opium association at Shanghai, urging it to fight for rigid curtailment of opium production to strict medical requirements and declaring that the Chinese people as a whole were eagerly desirous of having the opium traffic abolished.

BOOK NOTICES AND REVIEWS.

The Plant Alkaloids. By Thomas Anderson Henry, D. Sc., Director of the Wellcome Chemical Research Laboratories, London. Second Edition, with 8 Plates, pp. 456. P. Blakiston's Son & Co., Philadelphia, 1924.

Ten years have elapsed since the well-known work by Dr. Henry on *The Plant Alkaloids* was first published and in the meantime many important contributions have been made to the knowledge of this class of compounds. It is therefore a source of much satisfaction that a new edition of the work has been made available. In the present edition much new material has been incorporated, consideration having been given to the constitution of many of the alkaloids and also to such information as at present exists regarding the correlation of their chemical constitution and physiological action.

The subject-matter of the work has been classified so far as possible with reference to the constitution of the alkaloids, and the most expedient arrangement for this purpose has been considered to be their division into such groups as contain respectively the (1) pyrrole, (2) pyridine, (3) tropane, (4) quinoline, (5) *iso*quinoline, (6) indole, (7) glyoxaline, and (8) the purine nucleus. These are followed by (9) alkaloids derived from aliphatic amines and (10) alkaloids of unknown constitution.

All the more important alkaloids of the above-mentioned groups are very fully described with reference to their botanical sources, chemical characters and physiological action, and in connection with each subject there are abundant citations of the literature. The methods of the British and United States Pharmacopœias for the assay of drugs containing medicinal alkaloids have also been included, such, for example, as those for coca leaves, cinchona bark, nux vomica, opium and the solanaceous plants. Inasmuch as the author has referred (p. 330) to the method of Power and Chesnut for the determination of caffeine in vegetable material, it may not be amiss to note that this method has now been adopted as the official one by the Association of Official Agricultural Chemists.

The experience of the author in the investigation of plant alkaloids has rendered him exceptionally well qualified for undertaking the task of elucidating a subject of such complexity, and a perusal of the present work reveals the painstaking care that has been exercised in its accomplishment. It may consequently be stated that the work possesses such a degree of accuracy and completeness as to merit the highest commendation, and all who are interested in the study of plant alkaloids may be assured of finding it to contain thoroughly trustworthy information concerning them.

It only remains to be noted that the book is excellently printed, substantially bound, and provided with a very complete index.

F. B. POWER.

Allen's "Commercial Organic Analysis," 5th Edition, Editors: Samuel S. Sadtler, S. B., Elbert C. Lathrop, A.B., Ph.D., and C. Ainsworth Mitchell, M.S., F.I.C. Volume II, 8vo. IX + 807 pages. P. Blakiston's Son & Co., Philadelphia. Cloth. $7.50.

The fourth edition of this old standby comprised 517 pages. The scope of the work is practically unchanged, the increase of approximately 300 pages being accounted for by the introduction of many new methods as well as by more detailed and explicit treatment thereof. This latter is very fortunate and should greatly promote uniformity in results obtained by different workers. While the revisers and editors have given prominence to the above-mentioned newer and accepted methods, many of the earlier ones, considered as satisfactory and available for routine work have been retained.

The following is the list of collaborators and the topics contributed by each: C. Ainsworth Mitchell, London, England, "General Properties and Analytical Methods for Fixed Oils, Fats

and Waxes;" by the same author, "Special Characters and Modes of Examining Fats, Oils and Waxes;" E. R. Bolton, London, England, "Butter Fat;" George A. Reitz, Philadelphia, U. S. A., "Lard;" Glenn W. Pickard, Minneapolis, U. S. A.,"Linseed Oil;" H. E. Cox, Newport, England, "Higher Fatty Acids;" Elbert C. Lathrop, Philadelphia, U. S. A., "Soaps;" J. W. Lawrie, Washington, U. S. A., "Glycerin;" Augustus H. Gill, Boston, U. S. A., "Wool Fat, Wool Grease, Suint and Degras;" John Addyman Gardner, London, England, "Sterol Alcohols."

The number of tables has been considerably increased and wherever possible they seem to have been brought up to date. The bibliography has been treated likewise. At the end of the chapter devoted to glycerin is found a very extensive table of physical constants for glycerol and its solutions in water. The bibliography of the 40 sources quoted is listed in each case in tabulated form. This chapter contains 90 pages, an increase of 59 over that in the former edition. Detailed descriptions for all analytical methods are given as well as some very excellent cuts descriptive of necessary apparatus.

The same increase of material is noted in the chapter on soaps. A short résumé might not be out of place in pointing out the thoroughness of the revision. It will also show how valuable and necessary the volume will be for those whose work calls only for occasional examinations and analyses pertaining to soaps. Following upon an introduction treating of "general properties," "commercial varieties of soap and their manufacture," one finds the very comprehensive methods of analyses approved by the special committee of the A. C. S. which include not only the ordinary ingredients and fillers but methods for detection and estimation of such "special" components as borax, hydrocarbons, phenol, sugar, etc. Complete and satisfactory tabulated specifications have also been included.

Many of the great variety of vegetable and animal oils that have found industrial application during recent years have been included in the chapter on oils. The same is true of the fats.

All in all, as stated above, the book should have a place on the shelf of every analytical chemist. It will be a wonderful help to the teacher and student interested in the topics discussed therein.

JEANNOT HOSTMANN.

Stevens Plant Anatomy. 4th Edition. P. Blakiston's Son & Co., Philadelphia, Publishers. Price $3.50.

To make a textbook both scientifically instructive and yet interestingly readable is not always an easy task. In Stevens "Plant Anatomy" the author has successfully accomplished this. He has taken the extensive material at his disposal and arranged it in an interesting and logical sequence. With a great lucidity of description and with the aid of a large number of excellent drawings and diagrams, the evolution of the various physiological tissue systems from a primitive undifferentiated embryonic tissue is traced.

The first chapter starting with a treatment of the plant cell as structural unit is followed by chapters with the following headings: Differentiation of the Tissues, Secondary Increase in Thickness, Protection from Injury and Loss of Water, The Plant Skeleton, The Absorption of Water and Minerals, Transport of Water and Soil Solutes, Intake and Distribution of Gases, Construction of the Plant's Food, Transport of Food, Storage of Food and Water, Secretion and Excretion, and Reproduction. At the end of each chapter suggested illustrative studies, bearing on the material covered, are given.

Those mooted questions of botany, the solution of which have been arrived at or approached, such as the genesis of the plastids, the constitution of chlorophyll, the structure of the cell wall, the construction of nitrogenous foods, the ascent of water and the operation of the stomata, are given due consideration in the present revision.

That portion of the book dealing with microtechnic has been added to and modified particularly in the chapters on the Preparation of sections, Plant Products and Reagents and Processes.

The index is exceptionally complete.

M. DITTMAR.

Poultry Diseases. How to Prevent or Cure Them. By Henry Gray, M.R.C.V.S. 138 pp. The Bazaar, Exchange & Mart. London. 2 s.

During recent years there has been no authoritative work on this subject, either in the United States or Great Britain, and for that reason the book is welcome. It is not intended to be an exhaustive treatise on diseases of poultry but to act as a guide to those looking for reliable information. Most of the facts given are drawn from results of nearly forty

years of scientific and practical study on poultry diseases by the author. The book is divided into Poultry Diseases, Drugs and their Uses, Weights and Measures, and a Glossary.

Pharmacists in the United States especially in the suburbs and country are frequently called upon for information on this subject and for that purpose the book is a reliable mentor.

Ferdinand Enke, Stuttgart, the well-known German publisher of pharmaceutical, chemical, physical, technical and other scientific works, favored us with the following books for review:

Bernhard Fischer's *Lehrbuch der Chemie fuer Pharmazeuten.* Von Dr. Georg Frerichs, Professor der pharmazeutischen Chemie an der Universität Bonn. S. neubearbeitete Auflage mit 81 Textabbildungen. Lex. Octavo. 886 pp. M. 28.50.

Bernhard Fischer, a student of Kekule, Wallach and Clausius at the University of Bonn and then pharmacist, chemist, teacher, editor and author with a world-wide reputation, published the first edition of this book in 1889. Beginning with the sixth edition in 1909 another authority, Dr. Georg Frerichs, professor of Pharmaceutical Chemistry at the University of Bonn, continued the work which is now in its eighth edition.

This is a real book on pharmaceutical chemistry for both students and pharmacists. It contains that part of chemistry which a pharmacist should, and in Germany, must know to become an apotheker and practice pharmacy. The first part of the work, 50 pages, is devoted to general chemistry. The second section of 320 pages deals with inorganic chemistry, divided as usual into non-metals and metals. The monographs are short and concise, giving occurrence, preparation, properties, tests and uses. The Latin names are quoted and special stress is laid upon German Pharmacopœia chemicals. The third part of 370 pages comprises organic chemistry divided into alipathic, carbocyclic and heterocyclic compounds. How thorough the book is, can be seen from the fact that 30 pages alone are devoted to alkaloids, the knowledge of which is so important to the pharmacist. Volatile oils, resins, balsams, glucosides, coloring substances, albumins, enzymes, etc., also receive proper attention. Part IV consists of an excellent section on volumetric analysis of 86 pages, an important subject to the pharmaceutical chemist. Part V is devoted to stoichiometry and contains 30 typical examples in questions and answers. Part VI consists of physical analytical methods such as melting, freezing and boiling points, specific gravity and polarimetry. A quite unusually detailed and complete index of 21 pages in 3 columns concludes this excellent "Pharmaceutical Chemistry" which we can highly recommend to pharmacists, teachers and students.

Der Nachweis Organischer Verbindungen. Ausgewaehlte Reaktionen und Verfahren. Von Dr. L. Rosenthaler. Professor an der Universität Bern. 2 vermehrte und verbesserte Auflage. Lex. Octavo. 1028 pp. M. 39.60.

The prolific author and contributor to pharmaceutical literature, whose "Pharmaceutical Analysis" we had the pleasure to review in the JOURNAL, May 1923, 474, has created a masterwork in the volume before us which is now in its second edition, the first one being published in 1914.

The introduction gives a description of microchemical methods and the detection of elementary substances. The 33 chapters of the work deal with: Hydrocarbons, Alcohols, Aldehydes, Ketones, Carbohydrates, Phenols, Acids, Oxyacids, etc., Ethers, Quinones, Esters, Halogen Derivatives, Nitro Derivations, Nitrils and Isonitrils, Amides, Amines, Acid Derivatives, Heterocyclic Bases, Amino Acids, Organic Sulphur Compounds, Arsenic, Antimony, Mercury and Gold Compounds, Alkaloids, Resins, Tannins, Glucosides, Bitter Principles, Coloring Matter, Albumins, Enzymes and Toxalbumins. How fully the different chapters are prepared can be seen from the number of pages devoted to each, for instance: Alcohols 63, Phenols 33, Esters 39, Carbohydrates 60, Alkaloids 117, Glucosides 33, etc. How thoroughly the subject is treated can be appreciated if we take the chapter on Alcohols as an example: Color, Reactions, Separation from the Compounds, Detection of Primary and other Alcohols, Separation, Detection of Methyl Alcohol which alone occupies 8 pages, etc.

Truly a masterwork, containing a mint of information! The book also contains many valuable Tables of Constants, Melting Points of Solids and Boiling Points of Liquids, arranged systematically according to temperature. It is a valuable work of reference for both pharmaceutical and analytical chemists.

OTTO RAUBENHEIMER, PH.M.